OROCA Language Modernization Working Group

The task from the ACM 19-02 is to propose updated language for OROCA to be published in the AIM/AIP, on the enroute chart legend, and in the Instrument Procedures Handbook.

The goal is to "operationalize" OROCA—rather than merely define it--so pilots can better use OROCA in flight planning and while in-flight, at the same time making sure pilots understand that OROCA is not, by itself, a minimum IFR altitude under 14 CFR §91.177.

ORIGINAL ENTRY		REVISED ENTRY
Pilot/Controller Glossary OFF−ROUTE OBSTRUCTION CLEARANCE ALTITUDE (OROCA)− An off-route altitude which provides obstruction clearance with a 1,000 foot buffer in non−mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.		***Pilot/Controller Glossary*** OFF−ROUTE OBSTRUCTION CLEARANCE ALTITUDE (OROCA)− A published altitude which provides terrain and obstruction clearance with a 1,000 foot buffer in non−mountainous areas and a 2,000 foot buffer in designated mountainous areas within the United States, and a 3,000 foot buffer outside the US ADIZ. These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.
Aeronautical Information Manual (AIM) **4−4−9. VFR/IFR Flights** A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the MEA/MIA/MVA/OROCA, pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions. *NOTE−* *OROCA is an off−route altitude which provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground−based navigational aids, air traffic control radar, or communications coverage.*		***Aeronautical Information Manual (AIM)*** **4−4−9. VFR/IFR Flights** A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the MEA/MIA/MVA/OROCA, pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions. *NOTE−* *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*
5-4-5 (b) **e. Minimum Vectoring Altitudes** (MVAs) are…around the obstruction (See FIG 5-4-11.) 1. The minimum vectoring altitude in each		**5-4-5 (b)** **e. Minimum Vectoring Altitudes** (MVAs) are…around the obstruction (See FIG 5-4-11.) 1. The minimum vectoring altitude in each

sector provides 1,000 feet above the highest obstacle in non-mountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVAs are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of Airport Surveillance Radar (ASR). The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace. *NOTE−* *OROCA is an off−route altitude which provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground−based navigational aids, air traffic control radar, or communications coverage.*		sector provides 1,000 feet above the highest obstacle in non-mountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVAs are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of ATC surveillance. The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace. *NOTE−* *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*
5−1−16. RNAV and RNP Operations **a.** During the pre−flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non−RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed.		**5−1−16. RNAV and RNP Operations** **a.** During the pre−flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non−RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed. Pilots are reminded that on composite VFR to IFR flight plan, or on an IFR clearance, while flying unpublished departures via RNAV into uncontrolled airspace, the PIC is responsible for terrain and obstruction clearance until reaching the MEA/MIA/MVA/OROCA. *NOTE−* *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*
Aeronautical Information Publication (AIP) 30. VFR/IFR Flights		***Aeronautical Information Publication (AIP)*** 30. VFR/IFR Flights

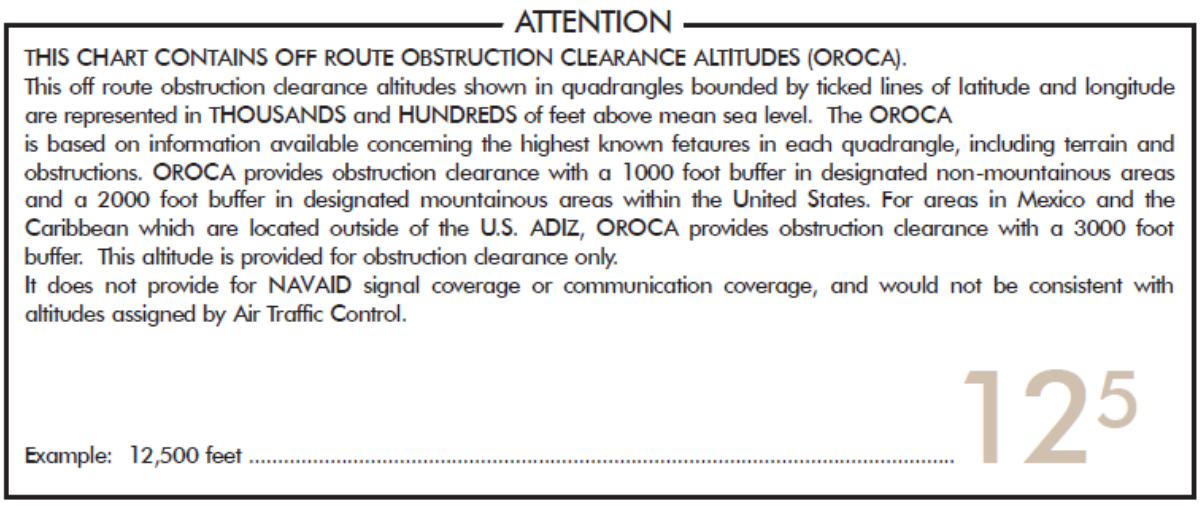
30.1 A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the minimum en route altitude (MEA)/minimum IFR altitude (MIA)/minimum vector altitude (MVA)/off route obstruction clearance altitude (OROCA), pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If the pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions. *NOTE−* *OROCA is an off route altitude which provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground based navigational aids, air traffic control radar, or communications coverage.*		30.1 A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the minimum en route altitude (MEA)/minimum IFR altitude (MIA)/minimum vector altitude (MVA)/off route obstruction clearance altitude (OROCA), pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If the pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions. *NOTE−* *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*
ENR 12.5.1 The minimum vectoring altitude in each sector provides 1,000 feet above the highest obstacle in non-mountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVAs are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of Airport Surveillance Radar (ASR). The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace. *NOTE−* *OROCA is an off−route altitude which provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground−based navigational aids, air traffic control radar, or communications coverage.*		ENR 12.5.1 The minimum vectoring altitude in each sector provides 1,000 feet above the highest obstacle in non-mountainous areas and 2,000 feet above the highest obstacle in designated mountainous areas. Where lower MVAs are required in designated mountainous areas to achieve compatibility with terminal routes or to permit vectoring to an IAP, 1,000 feet of obstacle clearance may be authorized with the use of ATC surveillance. The minimum vectoring altitude will provide at least 300 feet above the floor of controlled airspace. *NOTE−* *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*
ENR 11.3 RNAV and RNP Operations 11.3.1 During the pre−flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non−RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed.		**ENR 11.3 RNAV and RNP Operations** 11.3.1 During the pre−flight planning phase the availability of the navigation infrastructure required for the intended operation, including any non−RNAV contingencies, must be confirmed for the period of intended operation. Availability of the onboard navigation equipment necessary for the route to be flown must be confirmed. Pilots are reminded that on composite VFR to IFR flight plan, or on an IFR clearance, while flying unpublished

		departures via RNAV into uncontrolled airspace, the PIC is responsible for terrain and obstruction clearance until reaching the MEA/MIA/MVA/OROCA. *NOTE–* *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*
ENR 1.1 General Rules **30. VFR/IFR Flights** **30.1** A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the minimum en route altitude (MEA)/minimum IFR altitude (MIA)/minimum vector altitude (MVA)/off route obstruction clearance altitude (OROCA), pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If the pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions. ***NOTE-*** *OROCA is an off route altitude which provides obstruction clearance with a 1,000 foot buffer in non-mountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the U.S. This altitude may not provide signal coverage from ground based navigational aids, air traffic control radar, or communications coverage.*		**ENR 1.1 General Rules** **30. VFR/IFR Flights** **30.1** A pilot departing VFR, either intending to or needing to obtain an IFR clearance en route, must be aware of the position of the aircraft and the relative terrain/obstructions. When accepting a clearance below the minimum en route altitude (MEA)/minimum IFR altitude (MIA)/minimum vector altitude (MVA)/off route obstruction clearance altitude (OROCA), pilots are responsible for their own terrain/obstruction clearance until reaching the MEA/MIA/MVA/OROCA. If the pilots are unable to maintain terrain/obstruction clearance, the controller should be advised and pilots should state their intentions. Pilots are reminded that on composite VFR to IFR flight plan, or on an IFR clearance, while flying unpublished departures via RNAV into uncontrolled airspace, the PIC is responsible for terrain and obstruction clearance until reaching the MEA/MIA/MVA/OROCA. ***NOTE–*** *OROCA is a published altitude which provides 1,000 feet of terrain and obstruction clearance in the US (2,000 feet of clearance in designated mountainous areas). These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.*

Instrument Procedures Handbook		***Instrument Procedures Handbook***
Off-Route Obstruction Clearance Altitude		Off-Route Obstruction Clearance Altitude
An off-route obstruction clearance altitude (OROCA) is an off-route altitude that provides obstruction clearance with a 1,000-foot buffer in non-mountainous terrain areas and a 2,000-foot buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based NAVAIDs, ATC radar, or communications coverage. OROCAs are intended primarily as a pilot tool for emergencies and SA. OROCAs depicted on en route charts do not provide the pilot with an acceptable altitude for terrain and obstruction clearance for the purposes of off-route, random RNAV direct flights in either controlled or uncontrolled airspace. OROCAs are not subject to the same scrutiny as MEAs, minimum vectoring altitude (MVAs), MOCAs, and other minimum IFR altitudes. Since they do not undergo the same obstruction evaluation, airport airspace analysis procedures, or flight inspection, they cannot provide the same level of confidence as the other minimum IFR altitudes.		An off-route obstruction clearance altitude (OROCA) is an altitude published on en route charts that provides obstruction clearance with a 1,000-foot buffer in non-mountainous terrain areas and a 2,000-foot buffer in designated mountainous areas within the United States. This altitude may not provide adequate navigational signal coverage, ATC surveillance, or communications coverage. The OROCA is based on the highest known features in each quadrangle, including terrain and obstructions. For areas in Mexico and the Caribbean which are located outside of the U.S. ADIZ, the OROCA provides obstruction clearance with a 3,000-foot buffer. These altitudes are intended as an in-flight quick reference for contingencies and general situational awareness. As OROCAs do not undergo the same obstruction evaluation as altitudes air traffic control can assign, they cannot provide the same level of confidence as a minimum IFR altitude. Pilots may use OROCA as a guide to determining a minimum obstruction-free altitude for safe IFR flight; however, OROCAs are not continuously evaluated for new obstructions or assignable by air traffic control. For random flight routes, (i.e. the portion of an IFR flight that is not on published airways or ATS routes), ATC will assign an altitude that is above the highest minimum IFR altitude (MIA) along the projected random route segment being flown, including 4 miles either side of that route centerline.
When departing an airport VFR intending to or needing to obtain an IFR clearance en route, you must be aware of the position of your aircraft relative to terrain and obstructions. When accepting a clearance below the MEA, MIA, MVA, or the OROCA, you are responsible for your own terrain/ obstruction clearance until reaching the MEA, MIA, or MVA. If unable to visually maintain terrain/obstruction clearance, pilots should advise ATC and state intentions of the flight. [Figure 2-47]		When departing an airport under VFR intending to or needing to obtain an IFR clearance en route, you must be aware of the position of your aircraft relative to terrain and obstructions. Pilots departing under IFR using RNAV (not on a DP) into uncontrolled airspace are reminded that they are responsible for their own terrain and obstruction clearance until reaching the assigned IFR altitude. In all cases, when accepting any IFR clearance when below a minimum IFR altitude, you are responsible for your own terrain and obstruction clearance until you climb above the MEA, MIA, MVA, or OROCA in the climb to your assigned altitude. If unable to visually maintain terrain or obstruction clearance, pilots should advise ATC and state intentions of the flight. [Figure 2-47]

Airplane Flying Handbook (“no reference”)		***Airplane Flying Handbook***
Pilot’s Handbook of Aeronautical Knowledge (“no reference”)		***Pilot’s Handbook of Aeronautical Knowledge***
IFR Low En route Chart (one reference in the lower left-hand corner of the map coverage box)		***IFR Low En route Chart*** ***See below***

Original Chart Legend Entry



ATTENTION

THIS CHART CONTAINS OFF ROUTE OBSTRUCTION CLEARANCE ALTITUDES (OROCA).
This off route obstruction clearance altitudes shown in quadrangles bounded by ticked lines of latitude and longitude are represented in THOUSANDS and HUNDREDS of feet above mean sea level. The OROCA is based on information available concerning the highest known fetaures in each quadrangle, including terrain and obstructions. OROCA provides obstruction clearance with a 1000 foot buffer in designated non-mountainous areas and a 2000 foot buffer in designated mountainous areas within the United States. For areas in Mexico and the Caribbean which are located outside of the U.S. ADIZ, OROCA provides obstruction clearance with a 3000 foot buffer. This altitude is provided for obstruction clearance only.
It does not provide for NAVAID signal coverage or communication coverage, and would not be consistent with altitudes assigned by Air Traffic Control.

Example: 12,500 feet ..... 12[5]

Revised Chart Legend Text (same graphic):

THIS CHART CONTAINS OFF ROUTE OBSTRUCTION CLEARANCE ALTITUDES (OROCA).

The OROCA is shown in THOUSANDS and HUNDREDS of feet above mean sea level for a quadrangle bounded by ticked lines of latitude and longitude. OROCA is based on the highest known terrain feature or obstruction in each quadrangle, and provides a 1,000 foot buffer over the feature in designated non-mountainous areas (or a 2,000 foot buffer in designated mountainous areas) within the United States. For areas in Mexico and the Caribbean which are outside the U.S. ADIZ, OROCA provides obstruction clearance with a 3,000 foot buffer. These altitudes are not assessed for NAVAID signal coverage, air traffic control surveillance, or communications coverage, and are published for general situational awareness, flight planning and in-flight contingency use.

OROCA Language Modernization Small Working Group Membership

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