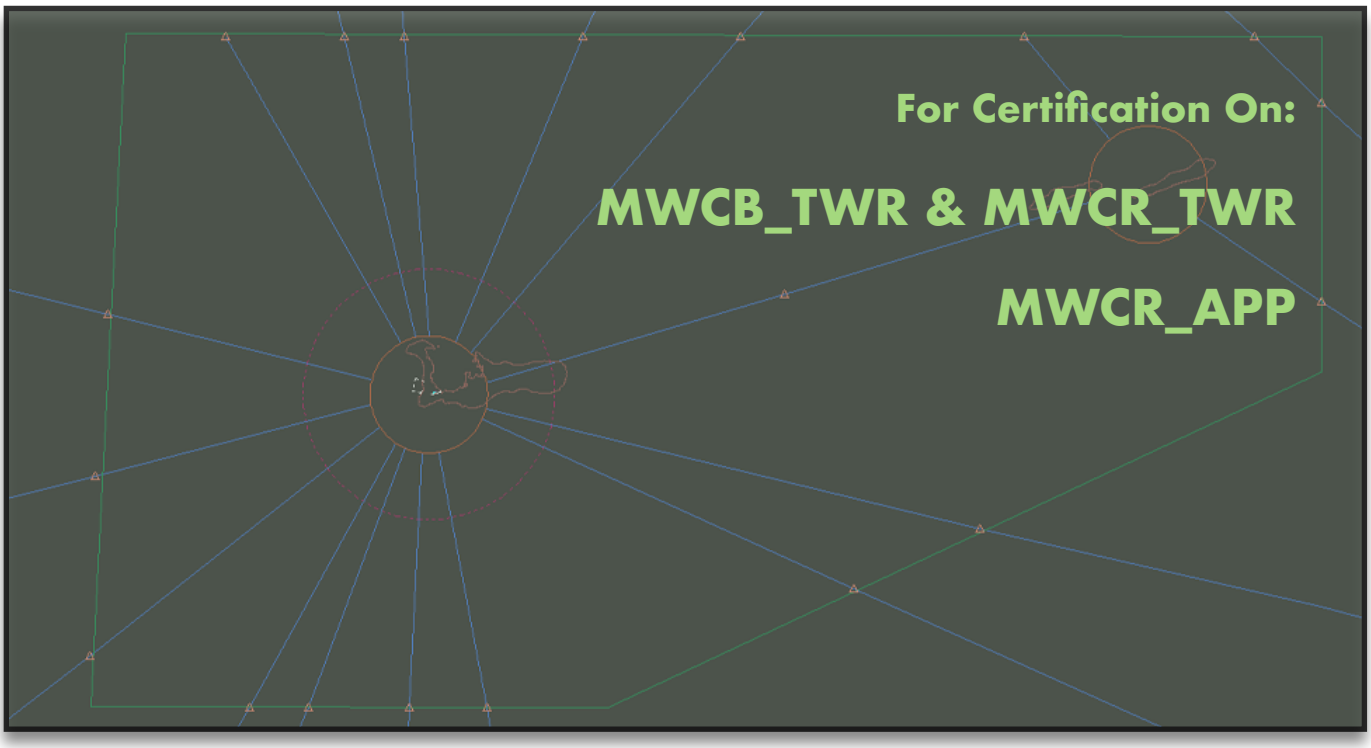
VATSIM's Kingston FIR
Standard Operating Procedures Vol. II
Operations Manual *(OPMAN)*
Cayman Islands TMA



Synthesized By Gray Taylor
Edited By Njeri Carroo
Compiled By Maurice Johnson

1. Introduction

1.1 Training Director's Greeting & Change Log

Dear Kingston FIR Controller,

Welcome to our Cayman Islands Operation Manual (SOP #2). Like the Jamaica OPMAN (#1) and Kingston ACC OPMAN (#3), this manual forms one-third of the official SOPs for the Kingston FIR. As such, this document, along with the other Operational Manuals, is an authoritative source on procedures and phraseologies for all Kingston FIR controllers.

This particular OPMAN covers all students/controllers from the S2 through S3 ratings. It covers all TWR and APP positions in the Cayman Islands. This volume will serve as the reference material for any instructor or mentor training a student on TWR-APP in the Cayman Islands. Mastery of this material is the goal for a trainee.

Not one OPMAN nor the entire SOP suite can cover every scenario one will encounter on VATSIM. However, once one masters the standards of his positions, it becomes easier to compromise and improvise the way an excellent controller does.

Until the Kingston FIR hires its next Instructor, all inquiries and questions related to the content of this document should be directed to the Training Director (training@kingston.vatcar.org) or in their absence, VATCAR3.

Your humble servant,

Gray Taylor
Kingston FIR (Virtual)

Table 1A: Document Change Log

JAN 1 2018	- Added Change Log - Updated MUFH squawk code assignments and related examples - Various grammatical, spelling, and semantical corrections
MAR 9 2018	- Amended Kingston Radar frequency - Added additional IFR departure examples for Procedural APP Control
APR 5 2018	- Expanded upon Critical Position Reports for Procedural APP Control - Expanded upon Expected Approach Time for Procedural APP Control - New FIR logo added

1.2 Table of Contents

4. Procedural Approach (APP) Control

1.3 Significance

This OPMAN is an operational document approved by VATCAR3 (or higher, if absent) per divisional policy. As such, this document (along with SOP Volumes 2 and 3) have supremacy over all other network policy documents covering the same content. VATCAR training documents (used to study for Rating advancement exams) might contain operational and phraseological guidelines which somewhat contradict those of the OPMAN(s). This is no more problematic than the real-world Caymanian ATC manuals containing deviations from ICAO standards. Like ICAO, VATCAR accommodates such deviations. If there is a phraseological or operational scenario NOT covered by one of our OPMs, controllers should defer first to the VATCAR training documents and then to the real-world ICAO documents (if not first clarified by a Kingston FIR Staff member).

1.4 Functions and Usages

1.4.1 Structure

The chapters of this volume consist of 3 elements:

a) Operational and phraseological standards
b) Tables and figures, labeled by chapter and sequence
c) Examples (see 1.4.2), individually titled, with:
    a) Flight Plans and/or...
    b) Phraseological content (dialogues and monologues)

1.4.2 Flight Plan (Example) Legend

Figure 1B: Flight Plan (Example) Legend

CALLSIGN - FLIGHT RULES		A/C WEIGHT/TYPE/EQUIP.
TWY60 - IFR		**CL60/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KBED	340	GCM G448 MTH VKZ PERMT AR16 LENDS OZENA AR18 LANIE AR18 DIW J174 HTO ORW
DEP APT - ARR APT	CRUISE	ROUTING

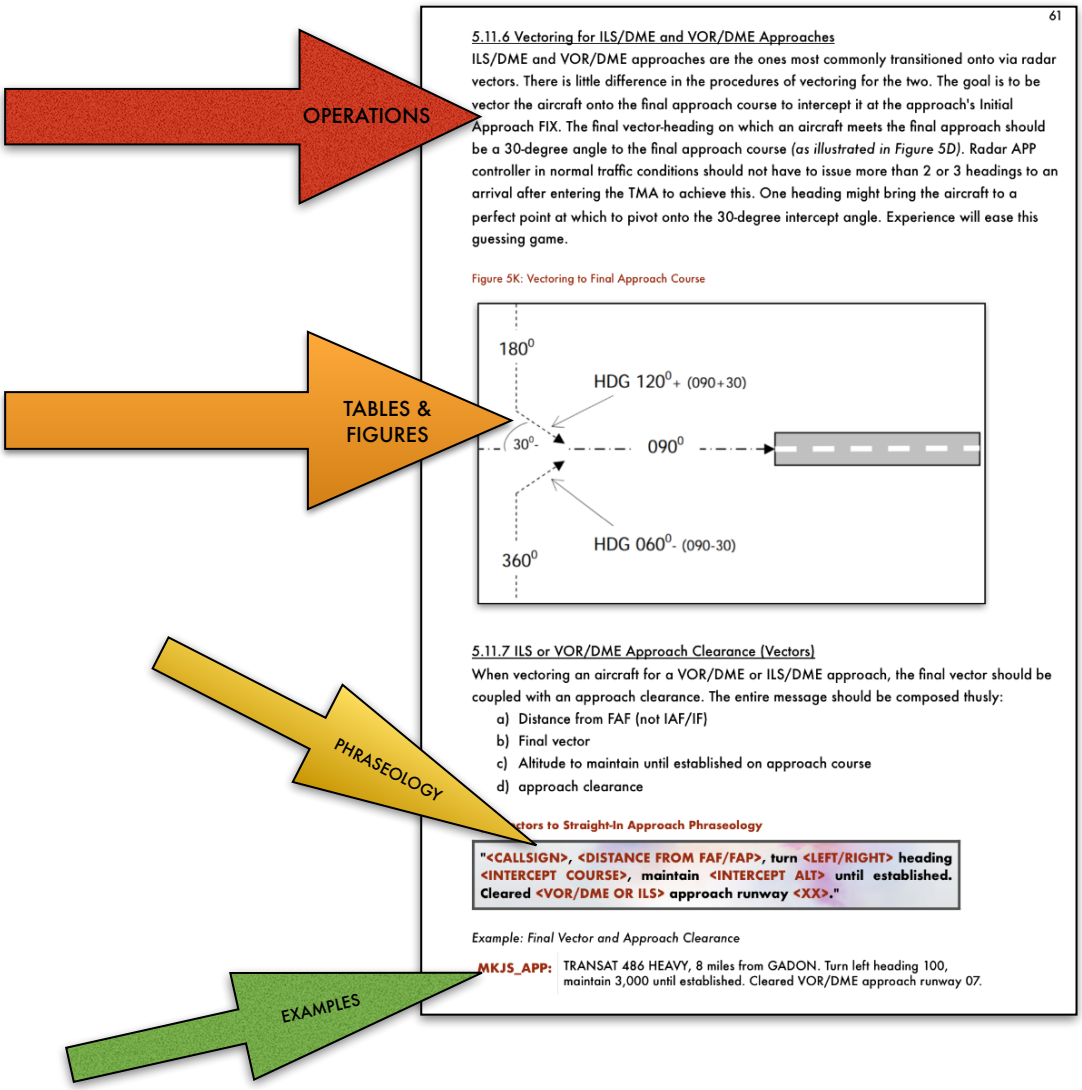
1.4.3 Example Notes

Please keep the following minutiae in mind regarding these example flight plans and accompanying dialogue:

- An "A" in the CFL (cruise flight level) represents an altitude ("A075" = 7,500 ft)
- Some dialogue sections in these examples may end or begin abruptly out of context. This is to shorten the document and make sure examples and phraseological content only apply to their particular section. These abrupt beginnings and ends will not muddy your understanding but only save you reading time.
- Some examples consist ONLY of a flight plan or ONLY of a dialogue, when the other is inconsequential to the concept being explained.

1.4.4 Document Legend

Figure 1C: OPMAN Legend



2. Universal Standards & Services

2.1 International Phonetic Alphabet

Table 2A: Phonetic Alphabet

LETTER	PHONETIC EQUIVALENT	PRONOUNCED AS
A	ALFA	Al fah
B	BRAVO	BRAH voh
C	CHARLIE	CHAR lee
D	DELTA	DELL tah
E	ECHO	ECK oh
F	FOXTROT	FOKS trot
G	GOLF	GOLF
H	HOTEL	hoh TELL
I	INDIA	IN dee ah
J	JULIETT	JEW lee ett
K	KILO	KEY loh
L	LIMA	LEE mah
M	MIKE	MIKE
N	NOVEMBER	no VEM ber
O	OSCAR	OSS cah
P	PAPA	pah PAH
Q	QUEBEC	keh BECK
R	ROMEO	ROW me oh
S	SIERRA	see AIR rah
T	TANGO	TANG oh
U	UNIFORM	YOU nee form
V	VICTOR	VIK tah
W	WHISKEY	WISS key
X	XRAY	ECKS RAY
Y	YANKEE	YANG key
Z	ZULU	ZOO loo

2.2 Speech Technique

Correct enunciation of words, spoken at a uniform rate in a voice pitched somewhat higher than normal but preserving the rhythm or ordinary conversation will do much to assist satisfactory reception of mechanically reproduced speech. Microphones and handsets are directionally functioning and controllers should therefore speak directly into them. To avoid clipped transmission, particularly where the transmitter is remotely located, it is important to depress the transmit switch fully before speech is commenced and to avoid returning it before the transmission is completed. Controllers should endeavor to use clear concise sentences devoid of such obvious faults as hesitation.

2.3 Basic Terminology

The phraseology in this document is based on the standards and recommended practices contained in ICAO Annex 10, Volume 2, and ICAO PANS-ATM, Document 4444.

Table 2B: Aircraft Callsign Transmissions

Callsign	Transmitted As
AVA238	AVIANCA TWO THREE EIGHT
CAY792	CAYMAN SEVEN NINER TWO

Table 2C: Flight Level & Altitude Transmission

Flight Level/Altitude	Transmitted As
FL180	FLIGHT LEVEL ONE EIGHT ZERO
FL400	FLIGHT LEVEL FOUR ZERO ZERO
900 ft	NINER HUNDRED FEET
2,500 ft	TWO THOUSAND FIVE HUNDRED FEET
11,000 ft	ONE ONE THOUSAND FEET

Table 2D: Heading Transmission

Heading	Transmitted As
100 Degrees	HEADING ONE ZERO ZERO
080 Degrees	HEADING ZERO EIGHT ZERO

Table 2E: Wind Direction and Speed Transmission

Wind Condition	Transmitted As
200 Degrees, 25 Knots	WIND TWO ZERO ZERO DEGREES TWO FIVE KNOTS
160 Degrees, 18 Knots Gusting to 30	WIND ONE SIX ZERO DEGREES ONE EIGHT KNOTS GUSTING THREE ZERO

Table 2F: Transponder Code Transmission

Squawk Code	Transmitted As
5100	SQUAWK FIVE ONE ZERO ZERO
6703	SQUAWK SIX SEVEN ZERO TREE

Table 2G: Runway Transmission

Runway	Transmitted As
25	RUNWAY TWO FIVE
30	RUNWAY THREE ZERO

Table 2H: Altimeter Setting Transmission

QNH Setting	Transmitted As
1010	QNH ONE ZERO ONE ZERO
1015	QNH ONE ZERO ONE FIVE

2.4 Radiotelephony ATC Callsigns

Table 2I: Controller Radiotelephony

Category	ATC Services	Radio Callsign(s)
Local Control	Aerodrome Tower **(TWR)**	*"OWEN ROBERTS TOWER"*
		"BRAC TOWER"
Terminal Control	Procedural Approach **(APP)**	*"CAYMAN APPROACH"*
Enroute Control	Area Radar **(CTR)**	*"KINGSTON RADAR"*

2.5 Aircraft Callsigns

Aircraft Callsigns shall be one of the following types:

a) The registration of the aircraft or the aircraft type followed by its registration, examples *6Y-JGT, C-GNCB, Cessna 6Y-JJC*.

b) The approved telephony designator of the operating company followed by the registration of the aircraft, e.g. *Speedbird GBGDC, Jamaica 6Y-JME*.

c) The approved telephony designator of the operating company followed by trip number, e.g. *Jamaica 020*.

2.5.1 Abbreviated Callsigns

Once satisfactory two way communication with an aircraft has been established, and provided that no confusion is likely, controllers may abbreviate the callsign, but only to the extent of: The first and the last two characters of the aircraft registration, e.g. *6-GT, C-CB,* or the aircraft type followed by the last two characters of the aircraft registration, e.g. *Cessna 6JC. ("CESSNA SIX JULIET CHARLIE")*

2.6 Pilot Readback

Pilots are required to read back in full messages containing any of the following items:

a) Taxi instructions

b) Altitude/Level instructions

c) Heading instructions

d) Speed instructions

e) Airways or route clearances

f) Approach clearances

g) Runway-in-use

h) Clearance to enter, land on, take-off, backtrack, or hold short of any active runway

i) Frequency changes

Controllers are to prompt a pilot if a readback is not immediately forthcoming. Errors in a readback must be corrected by the controller until the pilot gives an accurate readback.

2.7 ATC Airspace Types & Classifications

Figure 2J: Relevant ATC Airspaces, Cayman Islands

- **Control Area (CTA)**
  - **(Area Radar)**
- **Terminal Control Area (TMA)**
  - **(Procedural Approach)**
- **Control Zone (CTR)**
  - **(Aerodrome Tower)**

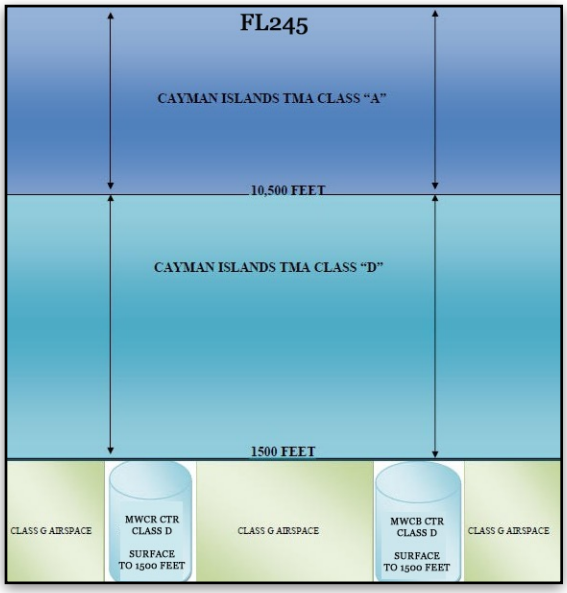


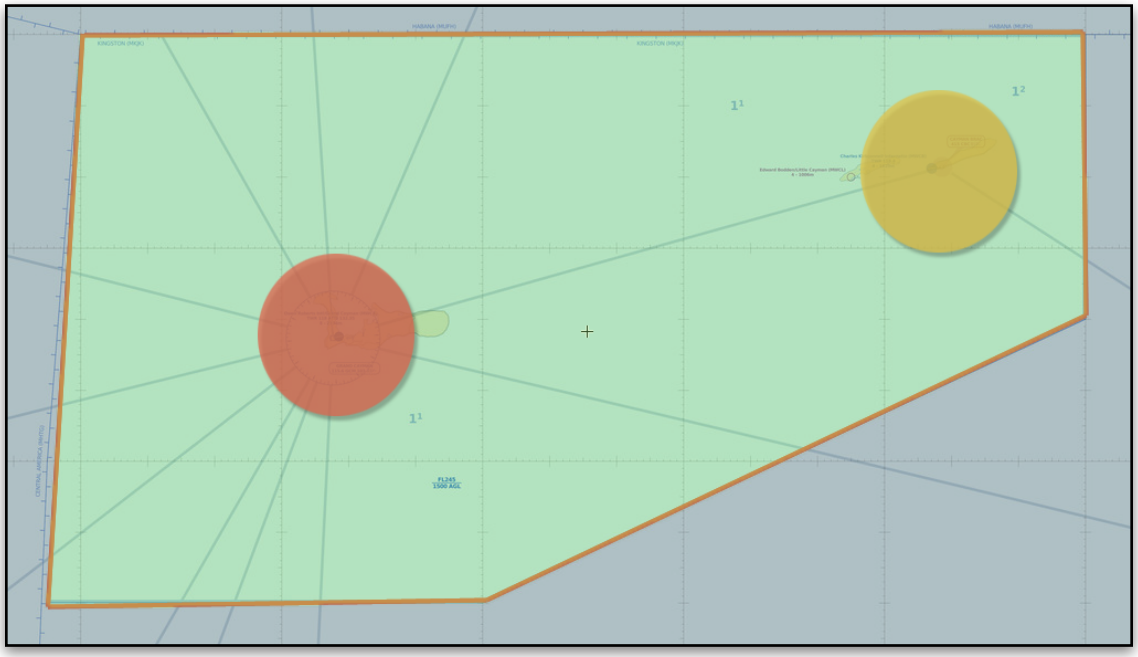
Table 2K: ATS Airspace Classification

Class	Rules	Requirements	Services Provided
A	**IFR**	a) Obtain ATC clearance before entry b) Comply with ATC instructions	a) Separate all aircraft from each other b) Provide Flight Information to all aircraft
D	**IFR & VFR**	a) Obtain ATC clearance before entry b) Comply with ATC instructions	a) Separate IFR flights from other IFR flights b) Pass traffic information to IFR flights on VFR flights and give traffic avoidance advice based on Radar. c) Pass traffic information to VFR flights on IFR flights and other VFR flights
E	**IFR & VFR**	a) IFR flights to obtain ATC clearance before entry b) Comply with ATC instructions c) VFR flights do not require clearance	a) Separate IFR flights from other IFR flights b) Pass traffic information, as far as practicable, to IFR on VFR flights c) Pass traffic information on all flights, as far as practicable, to VFR flights that are in radio contact
G	✖	a) No Clearance Required	a) Provide flight information service to VFR flights upon request

2.8 Airspace Divisions

Figure 2L: Airspace Divisions, Cayman Islands

Airspace/Sector	Owner	Class	Vertical Limits
Owen Roberts CTR	MWCR_TWR	**D**	SFC - 1,500 ft
Gerrard-Smith CTR	MWCB_TWR	**D**	SFC - 1,500 ft
Cayman Islands TMA	MWCR_APP	**A**	10,501 ft - 24,500 ft
		D	1,500 ft - 10,500 ft



2.9 Meteorological Reference

The official source of weather information to be used in determination of Flight Rules, Approach usability, and other critical decisions shall be the most relevant and most recent METAR provided by the VATSIM servers. This holds true regardless of whether the VATSIM-downloaded METAR differs from the real-world METAR for the same area/aerodrome. If a METAR is unavailable for an IFR aerodrome, any concerned aircraft should be informed that winds/conditions are "unavailable" and provide, if relevant, the conditions in the closest relevant METAR.

2.10 Altimeter Settings

Hectopascals (QNH) are the units for the provision of pressure altimeter settings to pilots.

2.11 Time

UTC and the 24-hour clock is to be used at all times. Example, *0130Z,* or 1:30 GMT.
When speaking a time value, normally only the minutes of the hour are required.

2.12 Flight Rules

Table 2M: Visual Meteorological (VMC) Minima

Altitude Band	Airspace Class	Visibility	Distance from Clouds/Line of Sight
At or above 10,000 ft	**A • D • E**	**8 km**	1,500 m (5,000 ft) **horizontally** 300 m (1,000 ft) **vertically**
Below 10,000 ft Above 3,000 ft	**D • E • ~~G~~**	**5 km**	
At and below 3,000 ft	**D • E**		
	~~G~~	**1.5 km**	Clear of cloud and in sight of the surface

2.12.1 Instrument Flight Rules (IFR)

A pilot must comply with the Instrument Flight Rules:

a) if the airspace has been notified as Class A; and
b) if the meteorological conditions preclude VFR flight.

Within Controlled Airspace (Classes A, D and E):

a) File a flight plan and obtain a clearance before proceeding with the flight;
b) Conduct the flight in accordance with clearances and instructions from an air traffic control unit;
c) Maintain a listening watch on the appropriate frequencies;

2.12.2 Visual Flight Rules (VFR)

VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance from clouds equal to or greater than the minima specified in *Table 2M* for Visual Meteorological Conditions (VMC).

2.13 Transition Level

In the Kingston FIR, altitude up to 17,000 ft AMSL are referred to in thousands of feet of altitude. Altitude 18,000 feet AMSL or higher are referred to in flight levels. See Section 2.3 for specific terminology.

2.14 Text Messages

While voice communications are always preferred, using EuroScope's text feature is perfectly acceptable. Text messages must be composed in accordance with the phraseological standards laid out in this document.

2.15 Speed Limits

Generally, published speed limitations are based on flight altitude or procedure. Speed control (used for separation and sequencing) should not be confused with speed limitations.

2.15.1 Altitude Speed Limit

The Civil Aviation Regulations require aircraft flying below 10,000 ft to observe a speed limit of 250 KT IAS except in circumstances set out below. This limit is an essential component of the 'see and avoid' principle when separation is not established by ATC.

2.15.2 Procedure Speed Limit

In certain cases, speed limits are published for specific ATC procedures for a number of reasons. If such limits exist they are published on the relevant SID, STAR, or IAP chart.

2.16 Low ATS Routes

Table 2N: Low ATS Routes, Cayman Islands TMA

Route	Significant Points	Track - Distance	Route	Significant Points	Track - Distance
A511	▲ LESOM	145° - 24 NM	G448	▲ ATUVI	180° - 43 NM
	◍ CBC 415.0			● GCM 115.600	
	▲ BETAR	127° - 24 NM		▲ EMONA	187° - 38 NM
R630 --------- B767	▲ KANEX	045° - 56 NM	L465	▲ LACET	332° - 50 NM
	● GCM 115.600			● GCM 115.600	
	▲ LEROL	204° - 40 NM		▲ ALOBO	174° - 38 NM
G877	▲ RIKEL	027° - 46 NM	G442	▲ KATAL	137° - 10.6 NM
	● GCM 115.600				
	▲ DELKA	033° - 43 NM		▲ ILATA	- - - -
G633	▲ NUBIS	260° - 41 NM	R640	▲ MAMBI	107° - 39 NM
	● GCM 115.600			● GCM 115.600	
	▲ NALRO	288° - 68 NM		▲ NALRO	288° - 68 NM
R644	▲ ULISA	056° - 52 NM	W8	▲ NUBIS	118° - 56 NM
	● GCM 115.600	078° - 45 NM			
	▲ TEXAM	078° - 44 NM			
	◍ CBC 415.0			● GCM 115.600	

2.17 Flight Plan Equipment Suffixes

All IFR flight plans should include an equipment suffix after the aircraft type. This suffix indicates the navigational and transponder capabilities of the aircraft:

Tables 2N: Flight Plan Equipment Suffixes

Navigation	Transponder	Suffix
DME	Transponder, Mode C	/A
	Transponder, NO Mode C	/B
	NO Transponder	/D
	Transponder, Mode C + RVSM	/W

Navigation	Transponder	Suffix
NO DME	Transponder, Mode C	/U
	Transponder, NO Mode C	/T
	NO Transponder	/X

Navigation	Transponder	Suffix
RNAV NO GNSS	Transponder, Mode C	/I
	Transponder, NO Mode C	/C
	NO Transponder	/Y
	Transponder Mode C, RVSM	/Z

Navigation	Transponder	Suffix
TACAN	Transponder, Mode C	/P
	Transponder, NO Mode C	/N
	NO Transponder	/M

Navigation	Transponder	Suffix
RNAV & GNSS (RNP)	Transponder, Mode C	/G
	Transponder, NO Mode C	/S
	NO Transponder	/V
	Transponder Mode C, RVSM	/L

2.18 Emergencies

Emergencies may only be simulated on VATSIM with the coalescence of the controller. Workload, mood, and pilot behavior may factor into a controller's decision to allow a simulated emergency. If a pilot declares an emergency, the following steps should be taken:

1. Request information on nature of emergency
2. Request fuel and passenger information
3. Advise emergency aircraft of options available for landing
4. Proceed normally using your best judgement and resources

Example: Approved Emergency Scenario

N386AS:	CAYMAN APPROACH, N386AS declaring an emergency. Engine failure on #1.
MWCR_APP:	N386AS, Cayman Approach, understand declaring emergency. State number of souls and remaining fuel onboard.
N386AS:	N386AS has 5 souls and about 130 minutes fuel.

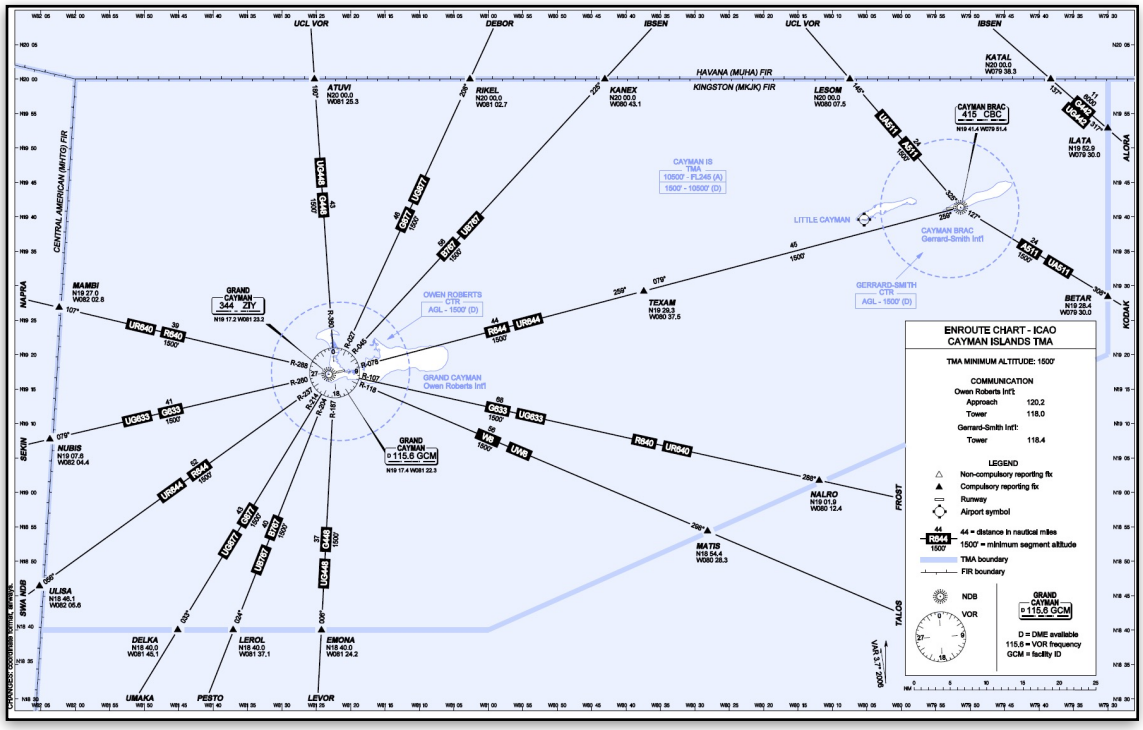
If you plan to refuse handling of an emergency:

Example: Refusal of Emergency Scenario

MWCR_APP:	N386AS, Cayman Approach not presently accepting emergency scenarios. Please discontinue emergency simulation or disconnect.

2.19 Terminal Area Chart

Figure 2O: Terminal Area Chart, Cayman Islands TMA



2.20 Aerodrome Charts

Figure 2P: MWCR Aerodrome Chart

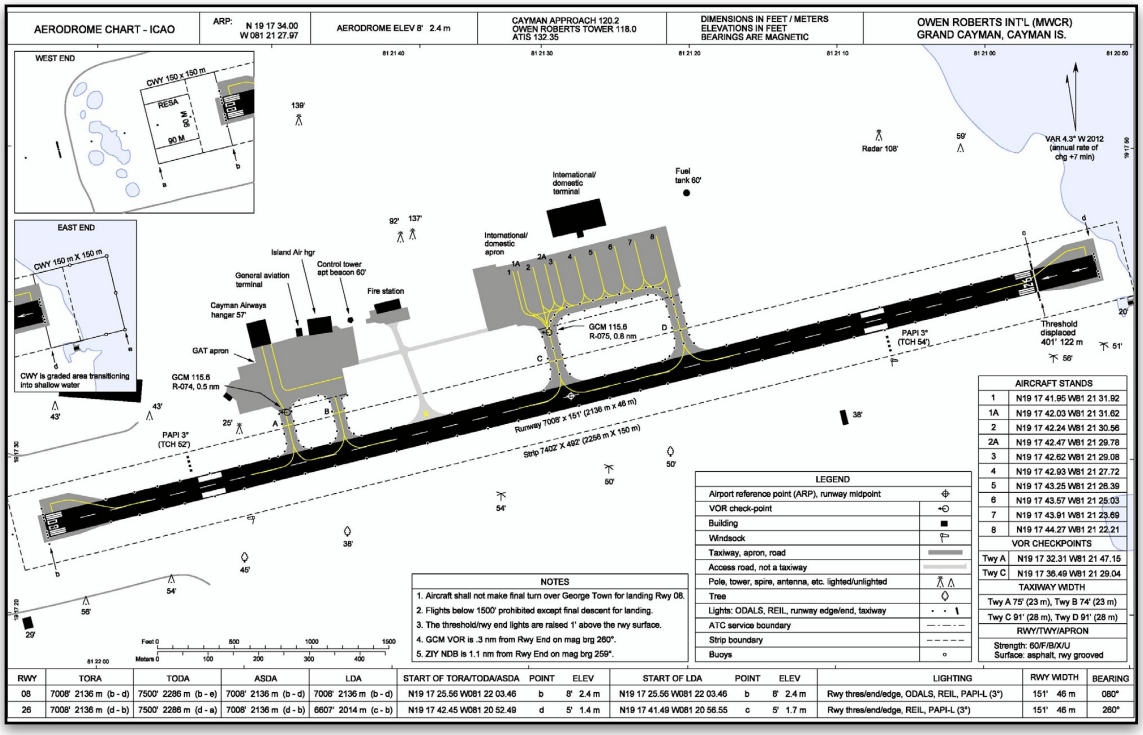
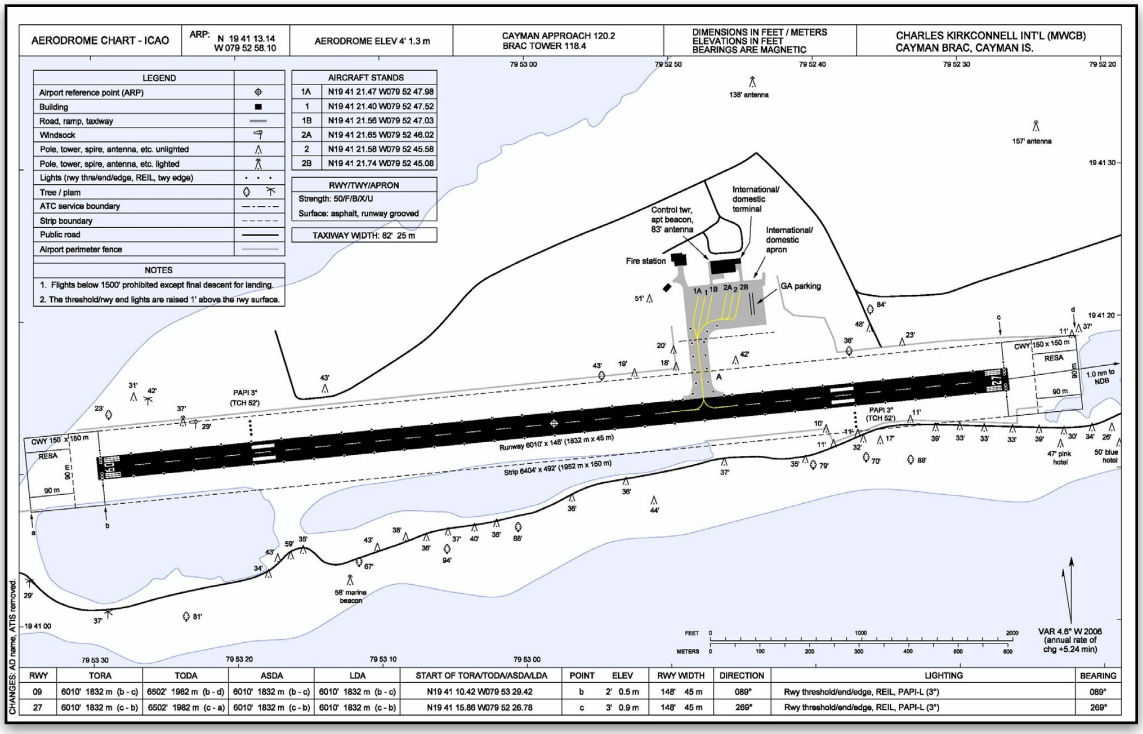


Figure 2Q: MWCB Aerodrome Chart



3. Aerodrome Tower (TWR) Control

3.1 Services Provided

An aerodrome control unit provides services principally to aircraft flying with visual reference to the surface, in the aerodrome traffic zone (ATZ) and operating on the maneuvering area:

a) aerodrome tower control service
b) flight information service
c) aerodrome ground service

3.2 Area of Jurisdiction and Authority

The area of jurisdiction of aerodrome control is the Control Zone (CTR) and the services provided therein will be consistent with its airspace classification.

3.3 General Responsibilities

Aerodrome controllers shall maintain a continuous watch on all flight operations within the aerodrome traffic zone as well as vehicles and personnel on the maneuvering area. Watch shall be maintained by visual observation augmented where available by the radar surveillance system.

Aerodrome control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying within the aerodrome traffic zone
b) aircraft taking off and landing

3.4 Relevant Positions

The positions governed by the procedural and phraseological guidelines of this chapter are listed below in *Table 3A,* along with specific jurisdictions.

Table 3A: Aerodrome TWR Positions, Cayman Islands

Position	Callsign	Airspaces	Limits	ID	FREQ.
Owen Roberts Tower	MWCR_TWR	Owen Roberts CTR	1,500 ft SFC/GND	MWCR	118.000
Brac Tower	MWCB_TWR	Gerard-Smith CTR	1,500 ft SFC/GND	MWCB	118.400

3.5 Systems Used

Both TWR positions in the Cayman Islands are strictly non-radar. The information used for separation of Traffic should come from the TWR controller's visual observations. Radar surveillance information is purely for additional situational awareness. TWR controllers should refrain from "tracking" (assuming) departing aircraft.

3.6 Coordination

3.6.1 Approach (APP) & Area (CTR) Control

If a terminal approach controller is online above you (or CTR, if APP offline), you must solicit a "clearance valid" message from them. This request should be made by TWR as an IFR departure approaches the end of its taxi route. If the presiding controller affirms "clearance valid", that aircraft may be released for takeoff.

☎️ *Example: Clearance Valid Request*

MWCR_TWR:	APPROACH, Owen Roberts Tower request clearance valid, CAY600.
MWCR_APP:	TOWER, Approach, clearance valid.
MWCR_TWR:	Roger, clearance valid.

Since an Aerodrome TWR controller cannot be expected to take responsibility for APP's terminal separation plan, MWCR_TWR and MWCB_TWR must seek a "clearance valid" approval from APP before allowing a departing aircraft to taxi onto the runway. For scenarios in which "clearance valid" might be denied, see Section 4.21.

After an aircraft departs, the TWR controller should inform the APP (or if offline, CTR) controller of the airplane's departure time:

☎️ *Example: Airborne Notification*

MWCB_TWR:	APPROACH, Brac Tower, departure, CAY4422.
MWCR_APP:	Go ahead.
MWCB_TWR:	CAY442 airborne 13 runway 09.
MWCR_APP:	Roger.

3.6.2 Contact-Me Requests

Aerodrome TWR control should only send a Contact-Me request to an aircraft if it is penetrating the CTR airspace or incurring on the active runway without prior permission.

3.7 Selection of Runway-In-Use

The term "runway-in-use" shall be used to indicate the runway that, at a particular time, is considered by the aerodrome TWR controller to be the most suitable. Normally, an aircraft will land and take off into wind unless safety, runway configuration or traffic conditions determine that a different direction is preferable. When the surface wind speed is 5 knots or greater, the runway-in-use is normally the one most closely aligned with the surface wind direction. The criteria for the selection of runway-in-use based solely on wind direction are self-explanatory. The runway with the magnetic heading most similar to the direction of the present winds shall be chosen.

Note: When selecting the runway-in-use, the aerodrome controller shall take into consideration other relevant factors such as:

a) traffic situation
b) length of runways or landing runs
c) approach and landing aids available
d) weather factors

3.7.1 Runway Changes

Should a change of runway be necessary aerodrome control, after consultation with approach control, shall inform the following:

a) aircraft under his control
b) personnel working on the aerodrome who will be affected by the change
d) adjacent aerodromes where traffic will be affected

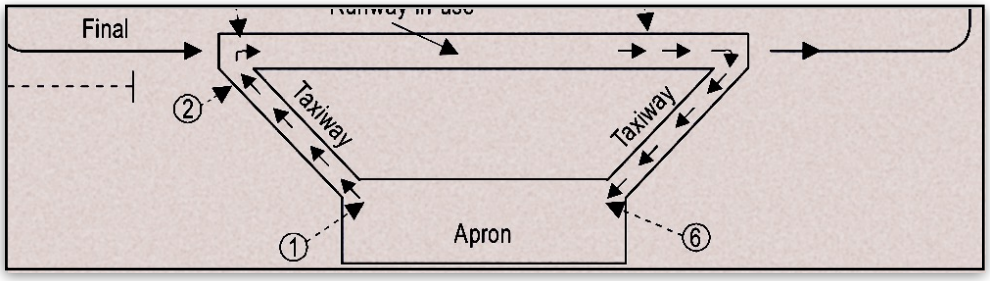
An aerodrome TWR controller may suggest, or approve a request for another runway other than the one determined provided:

a) he will gain an operational advantage
b) he clearly indicates the wind direction and speed to the pilot
c) the final decision is made by the pilot

When authorizing the use of a runway based on is criteria , the aerodrome controller shall consider the following factors:

a) effective cross-wind component
b) effective tail-wind component

An aerodrome controller electing to use both ends of the runway must ensure that safety is not jeopardized and the cross-wind and tail-wind thresholds are not breached.



3.8 Aerodrome Information & ATIS

Table 3B: ATIS Stations, Cayman Islands

ATIS Position	Callsign	Frequency
Owen Roberts Information	MWCR_ATIS	132.350

Note: All controllers logged in to an Aerodrome TWR position are expected to connect an automated voice ATIS as soon after log-on as possible. The instructions for doing so are included in the FIR EuroScope tutorials. A TWR controller should always be aware of the latest Aerodrome weather information (METAR) along with the content of the current voice ATIS. Pilots departing the Control Zone (CTR) should report *ATIS Onboard* as soon as they have received it. If a pilot fails to report the ATIS onboard during IFR and taxi clearances, the controller should continue to remind him of the current ATIS until the pilot reports having it, e.g. "*INFORMATION ALPHA IS CURRENT, 132.35" or "ADVISE WHEN YOU'VE RECEIVED ATIS INFORMATION BRAVO*".

3.9 Effect of Weather on operations

3.9.1 Suspension of VFR

When the official meteorological reports shows either a visibility of less than 5 km or a cloud ceiling of less than 450 m (1,500 ft) the aerodrome controller shall suspend VFR operations within the aerodrome traffic zone and take the following action:

a) hold all VFR departures
b) recall all local fights operating under VFR or obtain approval for SVFR operations
c) notify pilots of the reason for taking such action, if necessary or requested.

3.9.2 Marginal or Fluctuating Conditions

When the weather conditions are marginal or fluctuating about the relevant minima, the controller should:

a) advise each aircraft of the prevailing conditions; and,
b) permit VFR operations to continue if in his judgement it appears feasible.

Adverse or Fluctuating Weather Phraseology

"<CALLSIGN>, VFR operations at <AERODROME> now suspended due to prevailing instrument meteorological conditions. Advise if you would like to open a IFR flight plan or return for landing."
"<CALLSIGN>, please verify you'd like to continue VFR. Present field conditions are <IMC/MARGINAL> with <VISIBILITY/CEILING INFO>."

The information presented on this page is purely for reference. It is not enforceable on VATSIM as it would be redundant and not everyone has the same weather.

3.10 IFR Departure Routing

3.10.1 International Routing Requirements

Valid International IFR flight plans departing MWCB or MWCR must contain the following prescribed parameters:

1. An ATS Route (airway) segment which begins at the field's VOR/NDB and terminates at the TMA boundary, OR...
2. A SID (Standard Instrument Departure) which terminates at the TMA boundary, OR...
3. DIRECT to a TMA boundary point (FIX) via GPS/FMS

Note: To see a full list of the low ATS routes which run through the Cayman Islands TMA along with their constituent waypoints, find *Figure 2N* in Section 2.16.

Example: Via ATS Route

DAL917 - IFR		**MD88/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KATL	360	GCM G448 VRGAS G448 MTH LBV J73 SZW DAWWN HRBBY VYPPR1

Example: Via Direct to Boundary FIX

EJA312 - IFR		**C650/L**
CITYPAIR	**CFL**	**Filed Route**
MWCB - KFLL	280	**LESOM** A511 UCL G448 MTH DVALL2

Example: Via SID

CAY605 - IFR		**B733/W**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MKJP	250	**NALRO2** UR640 MLY

3.10.2 Inter-TMA Routing Requirements

All IFR flight plans traveling between MWCB and MWCR (in either direction) must contain the minimum following parameters:

a) The R644 ATS Route
b) A minimum cruising altitude of 3,000 feet
c) A maximum cruising altitude of 11,000 feet

3.10.3 Standard Instrument Departures (SIDs)

IFR Flights are not required to file a SID. However, since almost all of the SIDs for MWCR lead to a TMA boundary FIX, these procedures are an easy way to guarantee a valid departure routing.

3.11 Flight Plan Processing

All IFR and VFR departures who intend to fly more than 25 miles from their departure airport must file a valid flight plan.

3.11.1 Contents of an IFR Flight Plan

a) aircraft callsign
b) flight rules (IFR)
c) type of aircraft and wake turbulence category
d) equipment suffix
e) departure aerodrome
f) estimated time of departure (ETD)
g) cruising speed(s)
h) cruising level(s)
i) route of flight
j) destination aerodrome and alternate (if required)

3.11.2 Contents of a VFR Flight Plan

a) aircraft identification
b) flight rules (VFR)
c) type of aircraft and wake turbulence category
d) equipment suffix
e) departure aerodrome
f) cruising level(s)
h) destination aerodrome and alternate (if required)
i) fuel endurance

3.11.3 Controller Actions to Process Flight Plans

When a departure files an IFR Flight Plan it is TWR's responsibility to ensure that it meets the routing requirements listed in Section 3.10 and the formatting requirements listed in 3.11.1-2.

3.11.4 Cruising Altitudes/Levels

The controller must always look at a flight plan's filed cruise altitude or level. This should be a. Even or an odd level/altitude depending on the magnetic track of the route. Essentially, eastbound Flights should cruise at odd thousands, westbound Flights at even thousands.

Table 3C: IFR & VFR Cruising Flight Levels

FP Track	IFR Cruising Levels	VFR Cruising Levels
000 - 179° **(EASTBOUND)**	Any ODD thousand level up to FL410. E.g. A050, A130, FL190, FL410.	Any ODD thousand altitudes plus 500 ft. E.g. A035, A055, A075.... A115, A135.
180 - 360° **(WESTBOUND)**	Any EVEN thousand level up to FL400. E.g. A140, FL180, FL360, FL400.	Any EVEN thousand altitudes plus 500 ft. E.g. A045, A065, A085.... A125, A145.

These rules do not apply to traffic transiting between Panama, Kingston and Havana

3.11.5 Clearance Amendments

When an amendment is made to a clearance the new clearance shall be read in full to the pilot and shall automatically cancel any previous clearance.

Example: Cruise Level Amendment

N198HB - IFR		**LJ60/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KAUS	~~370~~	**ATUVI1 ATUVI** UL674 KEHLI A766 KELPP A766 LAURL VUH BBACH WLEEE3

MWCR_TWR:	LEARJET 8HB, Owen Roberts Tower, your planned cruise level is incorrect for your direction of flight. FL360 and FL380 available. Which one would you prefer?

Example: Flight Plan Routing Amendment

MWCR_TWR:	LEARJET 8HB, Owen Roberts Tower, an amendment to your flight plan, advise ready to copy.
N198HB:	Go ahead for 8HB.
MWCR_TWR:	N198HB, disregard the ATUVI1 departure, after departure join the G448 to ATUVI, then as filed.
N198HB:	Copy disregard the SID and join the G448 after departure, N198HB.
MWCR_TWR:	LEARJET 8HB, roger, taxi runway 08, backtrack, line up and wait via charlie. Advise ready to copy ATC clearance.

3.12 Transponder Code Assignment

Transponder (Squawk) Codes will only be assigned to aircraft departing IFR on a flight plan that will take them beyond the Cayman Islands TMA and into the Kingston FIR/CTA or Havana FIR/CTA. These codes should be conveyed in the delivery of the IFR clearance sequentially (see Table 3D). Inter-TMA Flights and those bound for MHTG FIR need not receive squawk codes.

Table 3D: Transponder Code Assignments, Cayman

Destination	Code Range
Jamaica	**0701 - 0777**
Havana FIR	**3150 - 3177**
Elsewhere (Except Central America)	**6701 - 6777**

3.13 Pushback, Departure Taxi & IFR Clearance Delivery

3.13.1 Overview, Timeline of Departure

IFR Departures in the Cayman Islands receive their IFR clearance during taxi for takeoff, rather than at the gate. A departure's initial call (for pushback, IFR clearance or taxi depending on the pilots' local familiarity) is the TWR controller's opportunity to acknowledge receipt of the aircraft's flight plan and discuss amendments to the flight plan if necessary.

3.13.2 Taxi Instructions

Once a departing aircraft has pushed back and/or started engines, it should be given a taxi clearance, traffic permitting, all the way onto the runway including backtrack and line-up. At a time convenient to pilot and controller, the IFR clearance should be delivered verbally.

Taxi Phraseology

"<CALLSIGN>, taxi runway <XX>, backtrack, line up and wait via <TAXIWAY>, advise ready to copy ATC clearance."
"<CALLSIGN>, taxi via <TAXIWAY>, holding point runway <XX>."

Example: Taxi Instructions

MWCR_TWR:	JET CARD 233, taxi runway 08, backtrack, line up and wait via Charlie. Advise ready to copy ATC clearance.
MWCB_TWR:	PILATUS 5NG, taxi runway 09, backtrack, line up and wait via Alpha. Advise ready to copy ATC clearance.

Example: Taxi Instructions (terminating at runway holding point)

MWCR_TWR:	JET CARD 233, taxi via charlie, holding point runway 08.

Example: Line-Up Instructions (from runway holding point)

MWCB_TWR:	PILATUS 5NG, backtrack, line up and wait runway 09.

3.13.3 Contents of an IFR Clearance

a) Aircraft Identification
b) Clearance Limit (destination)
c) SID and/or Routing up until TMA boundary
d) Initial Climb
e) Squawk Code, if bound for MKJK airspace (see 3.12)

IFR Clearance Clearance Phraseology

"<CALLSIGN> is cleared to the <DESTINATION> airport via <DEPARTURE ROUTING>, flight planned route. Climb and maintain <CRUISE LEVEL>, squawk <CODE>."

Example: IFR Clearances

MWCR_TWR:	EXECJET 371 is cleared to the Port-Au-Prince airport via W8, flight planned route. Climb and maintain FL310. Squawk 6714.
MWCB_TWR:	N285NG is cleared to the Owen Roberts airport via R644. Climb and maintain 8,000.
MWCR_TWR:	CAYMAN 102 is cleared to the Manley Airport via the NALRO2 departure, flight planned route. Climb and maintain FL270, squawk 0705.

Example: Pushback, Taxi, IFR Clearance

DPJ233 - IFR			**E50P/L**
CITYPAIR	**CFL**	**Filed Route**	
MWCR - KPDK	400	**GCM G448** MTH B9 DEEDS V35 RSW J75 HITTR J89 OTK V579 VNA V362 MCN	

MWCR_TWR:	JET CARD 233, Owen Roberts Tower, pushback and start is at your own risk. Call me for taxi.
DPJ233:	Push and start at our risk, call you for taxi, 233.
DPJ233:	Jet Card 233 request taxi runway 08.
MWCR_TWR:	JET CARD 233, taxi runway 08, backtrack, line up and wait via Charlie. Advise ready to copy ATC clearance.
DPJ233:	Charlie to backtrack and line up runway 08, ready to copy, 233.
MWCR_TWR:	JET CARD 233 is cleared to the PDK airport via G448, flight planned route. Climb and maintain FL400. Squawk 3151.
DPJ233:	Cleared to my destination via G448, as filed. Up to FL400, Jet Card 233. Squawk 3151.
MWCR_TWR:	JET CARD 233, readback correct. Advise ready for departure.

Example: Pushback, Taxi, IFR Clearance (2)

RVJ824 - IFR			**C25B/L**
CITYPAIR	**CFL**	**Filed Route**	
MWCB - KPQL	400	CBC A511 UCL UG448 MTH	

MWCB_TWR:	RIVERS JET 824, Brac Tower, good day. QNH 1013. Engine start is at your own risk, call me for taxi.
RVJ824:	Push and start at our risk, call you for taxi, 824.

RVJ824:	Rivers Jet 824 request taxi runway 09.
MWCB_TWR:	RIVERS JET 824, Taxi runway 09, backtrack, line up and wait via alpha. Advise ready to copy ATC clearance.
RVJ824:	Alpha, backtrack and line up runway 09, ready now, 824.
MWCB_TWR:	RIVERS JET 824 is cleared to the PQL airport via A511, flight planned route. Climb and maintain FL400. Squawk 3160.
RVJ824:	Cleared to my destination as filed. Up to FL400, squawking 3160, 824.
MWCB_TWR:	RIVERS JET 824, readback correct. Advise ready for departure.

3.13.4 Coordinating Surface Traffic

Example: Simultaneous Departure Taxi

N525LJ - IFR		**LJ45/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KFLL	280	KANEX2 KANEX UCL G448 MTH DVALL2

N590PU - VFR		**SR20/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCL	A075	

N525LJ:	OWEN ROBERTS TOWER, LearJet 525LJ, request Taxi, information Charlie.
MWCR_TWR:	N525LJ, OWEN ROBERTS TOWER, taxi runway 08, backtrack, line up and wait via alpha. Advise ready to copy ATC clearance.
N525LJ:	08, backtrack, line up and wait via alpha, will advise, 5LJ.
N590PU:	OWEN ROBERTS TOWER, Cirrus 590PU with charlie, Request Taxi VFR.
MWCR_TWR:	N590PU, OWEN ROBERTS TOWER, follow the Learjet on Alpha to holding point runway 08.
N590PU:	Behind the Learjet on alpha to holding point 08, 0PU.
N525LJ:	Ready to copy, 5LJ.
MWCR_TWR:	N525LJ is cleared to the Fort Lauderdale airport via the KANEX2 departure, flight planned route. Climb FL280.
N525LJ:	Cleared via flight planned route, up to FL280, 5LJ.
MWCR_TWR:	N525LJ, readback correct. Report when ready for takeoff.
MWCR_TWR:	CIRRUS 0PU, backtrack runway 08, line up and wait.
N590PU:	Backtrack and line up, 08, 0PU.

3.13.5 Surface Wake Turbulence (Taxiing)

An aerodrome controller should issue wake turbulence warnings when an aircraft is taxiing onto a runway on which a Heavy/Super aircraft has recently taken off or landed.

Example: Taxi Wake Turbulence Warning

MWCR_TWR:	CAYMAN 605, backtrack runway 08, line up and wait. Caution wake turbulence, departing 767.

3.14 VFR Departure Taxi

3.14.1 Required Clearance

VFR Departures need not receive a full route ATC clearance. Once the VFR pilot has submitted a valid flight plan, TWR can issue departure taxi instructions to the aircraft.

3.14.2 Local VFR

VFR Departures that intend to remain in the local CTR (traffic patterns, maneuvers) do not need to file a full flight plan.

Example: VFR Departure Taxi

N856LF - VFR		**PC12/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCB	A075	

N856LF: OWEN ROBERTS TOWER, N856LF at the FBO ramp, requesting engine start, VFR flight plan to the Brac.

MWCR_TWR: PILATUS 6LF, Owen Roberts Tower, good day. Engine start is at your own risk. Information alpha is current. Call me for taxi.

N856LF: Pilatus 6LF request taxi with information alpha.

MWCR_TWR: N856LF, taxi runway 08, backtrack, line up and wait via alpha.

Example - VFR Local Taxi

N239CA - VFR		**PA31/G**
CITYPAIR	**CFL**	**Filed Route**
MWCB - MWCB	A010	CIRCUITS

N239CA: BRAC TOWER, Piper N239CA request taxi to the active, remaining in pattern.

MWCB_TWR: N239CA, Brac Tower, good morning. Taxi runway 09, backtrack, line up and wait via alpha.

3.14.3 Intersection Departures

An intersection departure is a takeoff performed from a taxiway/runway intersection other than the standard holding point:

Intersection Departure Clearance Phraseology

"<CALLSIGN> surface winds <DIRECTION> <SPEED>. From intersection <TAXIWAY>, runway <RUNWAY>, cleared for takeoff."

3.15 Aircraft Taking Off

3.15.1 IFR Departures

IFR Departures will receive the following from Aerodrome TWR control:

a) Post-departure Instructions or SID

b) Surface wind conditions

c) The phrase "*CLEARED FOR TAKEOFF*"

IFR Takeoff Clearance Phraseology

> **"<CALLSIGN>, after departure <SID/ROUTE JOINING INSTRUCTIONS>, winds <DIRECTION> degrees at <SPEED> knots, cleared for takeoff runway <XX>."**

Example: IFR Takeoff Clearance (Joining ATS Route)

UAL1495:	OWEN ROBERTS TOWER, United 1495 is fully ready, 08.
MWCR_TWR:	UNITED 1495, after departure make a left turn to intercept the G448 flight-planned route. Winds 086 degrees at 12 knots, cleared for takeoff runway 08.

Example: IFR Takeoff Clearance (SID)

CAY106:	OWEN ROBERTS TOWER, Cayman 106 is ready to go 08.
MWCR_TWR:	CAYMAN 106, fly the KANEX2 departure. Surface winds 090 degrees 15 knots, cleared for takeoff runway 08.

3.15.2 VFR Departures

VFR Departures will receive the following from Aerodrome TWR:

a) Post-departure Instructions

b) Surface wind conditions

c) The phrase "*CLEARED FOR TAKEOFF*"

VFR Takeoff Clearance Phraseology

> **"<CALLSIGN>, make <LEFT/RIGHT> <CIRCUIT LEG> departure. Surface winds <DIRECTION> degrees at <SPEED> knots. Runway <XX>, cleared for takeoff."**

Example: VFR Takeoff Clearance

6Y-JJC - VFR		**C206/G**
CITYPAIR	**CFL**	**Filed Route**
MWCB - MKTP	A055	DCT

6Y-JJC:	BRAC TOWER, Cessna 6JC ready to go 27.
MWCB_TWR:	6Y-JJC, make left crosswind Departure, surface winds 280 at 10, cleared for takeoff runway 27.

If a VFR aircraft is departing to remain in the traffic pattern for an indefinite number of circuits:

Example: VFR Takeoff (Remaining in Circuit)

MWCB_TWR:	6Y-JJC, make left closed traffic, surface winds 280 at 10, cleared for takeoff runway 27.

3.15.3 Offline Approach Controller

If no APP or CTR controller is online to handle a departure under your control, departing aircraft should be issued a frequency change to UNICOM in lieu of a handoff *(e.g. "...AIRBORNE 23, CHANGE TO UNICOM 122.8")*

3.15.4 Intersection Departure Takeoffs

An intersection departure is a takeoff performed from a taxiway/runway intersection other than the standard holding point. Aerodrome TWR control may approve an intersection departure request from a pilot or suggest it themselves, (e.g. *"N909TS, make straight out departure. From intersection CHARLIE, cleared for takeoff runway 08..."*).

3.15.5 Post-Departure

Both IFR and VFR departures, once observed airborne, should receive the official airborne time (in minutes) passed on to APP, along with a frequency change to APP (or CTR, if APP offline).

Example: Post-Departure Instructions

MWCR_TWR:	UNITED 1495, airborne 19, contact Approach on 120.2.
MWCB_TWR:	N285NG, airborne 43, contact Cayman Approach on 120.2

3.15.6 Little Cayman Departures

Brac Tower is initially responsible for all departures from the VFR aerodrome MWCL:

Example: MWCL Departure (to MWCB)

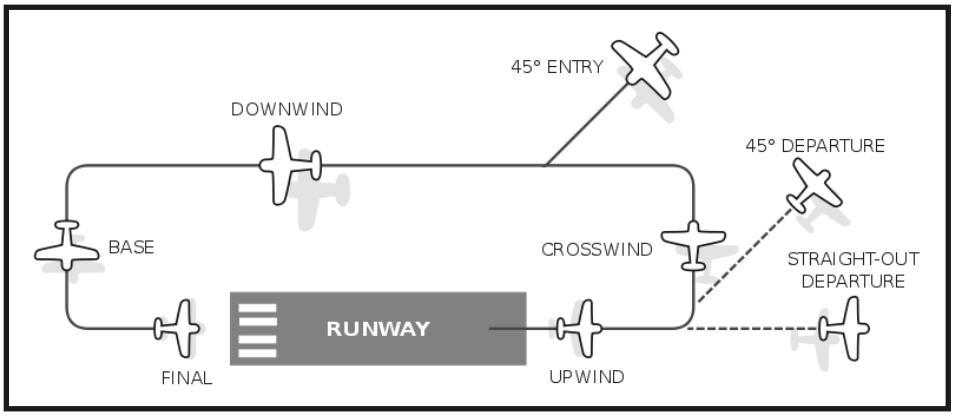
CAY4420:	BRAC TOWER, Cayman 4420 is taxiing for takeoff at Little Cayman, bound for the Brac.
MWCB_TWR:	CAYMAN 4420, Brac Tower, QNH is 1015, winds are from 080 degrees at 12 knots, visibility is greater than 10 kilometers. Report airborne. No traffic to affect you.
CAY4420:	BRAC TOWER, Cayman 4420 is airborne out of Little Cayman.
MWCB_TWR:	CAYMAN 4420, make straight-in runway 09. Surface winds 080 degree at 12 knots. Runway 09, cleared to land.

Example: MWCL Departure (to MWCR)

CAY4422:	BRAC TOWER, Cayman 4422 is airborne from Little Cayman, VFR to Owen Roberts.
MWCB_TWR:	CAYMAN 4422, Brac Tower, QNH is 1015, contact Cayman Approach on 120.2.

3.16 The Traffic Circuit

Figure 3E: Detailed Traffic Circuit Diagram



3.16.1 Critical Positions in the Circuit

Aerodrome controllers should be on the alert for conflicts between traffic in the following scenarios:

a) aircraft of left base and aircraft on right base
b) aircraft on base leg and aircraft on final
c) aircraft on downwind and aircraft joining base leg
d) aircraft on downwind and aircraft on crosswind

3.16.2 Circuit Altitude

Standard altitude for flying in the traffic circuit is 1,000 AGL (above ground level) in relation to the airport elevation.

3.17 Aircraft Landing

3.17.1 Joining Traffic Circuit

Clearance to enter a traffic circuit should be issued when an aircraft is still some distance from the airfield to enable the pilot to conform with the traffic circuit, pending clearance to land. This clearance should normally be given by Approach (APP) control, but if no such controller is online, but otherwise can fall to the Aerodrome TWR controller. Information concerning landing direction or runway in use and any other necessary instructions shall be given at the same time so that the pilot may intelligently position himself in the traffic pattern. This information should be issued in the following form:

a) aircraft identification
b) position at which to join the circuit
c) request for position report, if desired
d) other information such as traffic or essential aerodrome information

Depending on the circumstances and traffic conditions, an aircraft may be cleared to join at any position in the traffic circuit; except that, an aircraft executing an instrument approach shall normally be cleared straight-in unless visual maneuvering to the landing runway is required.

Traffic Circuit Entry Phraseology

"<CALLSIGN>, <ATC UNIT>, join and report <CIRCUIT LEG ENTEY> runway <XX>."

Examples: Instructions to join Traffic Circuit

MWCR_TWR:	CESSNA 6JC, join and report left downwind runway 26.
MWCB_TWR:	CAYMAN 4425, make straight-in runway 09, report 5-mile final.

Aircraft may be cleared to proceed overhead the aerodrome and thereafter to enter the traffic circuit at a specified point.

Example: Overflying the field to join Traffic Circuit

MWCR_TWR:	JETBLUE 876, overfly the field, join and report right downwind runway 08.

3.17.2 Clearance to Land

An aircraft may be cleared to land when there is reasonable assurance that the prescribed separation between a departing or arriving aircraft will exist when the aircraft crosses the threshold of the landing runway. If a landing clearance cannot be issued after an arrival's initial report to TWR is made, but it is assessed that the landing area will become available, the aircraft shall be instructed to "CONTINUE APPROACH" and the reason given, when appropriate.

Example: Landing Clearance Unavailable

N100PU:	OWEN ROBERTS TOWER, N101QS is 8 DME inbound on the VOR/ DME 08 approach.
MWCR_TWR:	N101QS, Owen Roberts Tower, continue approach, number 2. Expect late landing clearance.

Clearance to land shall be issued to an aircraft no later than short final, without waiting for a request from the Aircraft, and in the following form:

a) aircraft identification

b) Wind direction and speed

c) The phrase "*CLEARED TO LAND*"

Landing Clearance Phraseology

"<CALLSIGN>, <ATC UNIT>, winds <DIRECTION> degrees at <SPEED> knots, runway <XX>, cleared to land."

Examples: Clearance to Land

MWCR_TWR:	SPIRIT WINGS 833, Owen Roberts Tower, surface winds 090 degrees at 11 knots. Runway 08, cleared to land.
MWCB_TWR:	SOCATA 912BL, Brac Tower, traffic on the upwind. Surface winds 260 degrees at 7 knots. Runway 27, cleared to land.

3.17.3 Post-Landing Instructions

After an arriving aircraft has completed its landing roll, the air controller shall:

a) welcome and advise the aircraft of its actual time of arrival

b) issue instructions for vacating the runway

c) instruct the aircraft to taxi to the gate/ramp

Post-Landing Phraseology

"<CALLSIGN>, landed time <XX>, welcome to <AERODROME>. When able, vacate runway via <EXIT>."

Examples: Post-Landing Instructions

MWCR_TWR:	JETBLUE 876, landed time 30, welcome to Owen Roberts. When able, vacate runway via delta.
MWCB_TWR:	CAYMAN 4425, landed on the hour, welcome to the Brac. When able, vacate runway via alpha, taxi to parking. Good night.

3.17.4 Touch-And-Go, Stop-And-Go, or Low Approach

The phrase *"CLEARED FOR THE OPTION"* used in place of *"CLEARED TO LAND"* authorizes an aircraft to perform the pilot's choice of touch-and-go, stop-and-go, or low approach. The TWR controller may also specify which of the three maneuvers the aircraft is cleared for, e.g. *"CLEARED TOUCH-AND-GO"*. Aircraft cleared for the "option" MAY NOT perform a full-stop landing. An aircraft cleared for touch-and-go or stop-and-go shall be considered as an arriving aircraft until it has touched down, and as a departing aircraft thereafter. An aircraft cleared for a low approach shall be considered as an arriving aircraft it has crossed the landing threshold, and as a departing aircraft thereafter. An aircraft performing several traffic circuits successively should inform the TWR controller when ready to perform their full-stop landing. If clearance for a different type of maneuver has already been issued the controller can overwrite any disparity by affirming *"CLEARED TO LAND"*.

3.17.5 Short Approach

A "short approach" is a varied maneuver in which the aircraft abbreviated their downwind and base legs dramatically. This leads to a very short final and a much quicker vacating of the runway. A TWR controller must first verify the pilot's willingness to make a short approach *("N780SP, able short approach?")* before instructing them to do so *("N780SP, make short approach, cleared for the option...")*.

3.17.6 Go-Arounds and Missed Approaches

If there is not a reasonable assurance of prescribed separation as an arriving aircraft approaches the runway threshold, the TWR controller should initiate a go-around. If the aircraft is performing an instrument approach, TWR should instruct the pilot to perform the published missed-approach procedure and switch back to APP control:

Go-Around & Missed Approach Phraseology

"<CALLSIGN>, go around. I say again, go around. <REASON>."
"<CALLSIGN>, execute the published missed approach procedure. Contact Cayman Approach on 120.2."
"<CALLSIGN>, make <LEFT/RIGHT> closed traffic runway <XX>."

Example: Go-Around on Instrument Approach

MWCR_TWR:	JETBLUE 876, go around. I say again, go around. Traffic on runway.
JBU876:	Going around, 876.
MWCR_TWR:	JETBLUE 876, execute the published missed approach procedure. Contact Approach on 120.2.

If the aircraft is VFR or on a visual approach, they should remain on TWR frequency:

Example: Go-Around while VFR or on Visual Approach

MWCB_TWR:	CAYMAN 4425, go around. I repeat, go around.
CAY4425:	Going around, 4425.
MWCB_TWR:	CAYMAN 4425, make right closed traffic runway 09.
CAY4425:	Turning crosswind to downwind, Cayman 4425.
MWCB_TWR:	CAYMAN 4425, cleared to land runway 09.

3.17.7 MWCL Arrivals

Arrivals to the VFR aerodrome MWCL (Little Cayman) are transferred to Brac Tower after reporting Little Cayman in sight:

Example: MWCL Arrival (Brac Tower)

CAY4424:	BRAC TOWER, Cayman 4424 is inbound to land runway 10 at Little Cayman.
MWCB_TWR:	CAYMAN 4424, Brac Tower, good day. Winds are 080 degrees 12 knots, no reported traffic to affect you. Report on the ground at Little Cayman.
CAY4425:	BRAC TOWER, Cayman 4424 is shut down, engines off at Little Cayman.

3.18 Separation of Aerodrome Traffic

Tower (visual) separation means that the controller must use their best judgement in ensuring that landing, departing, and traffic-circuit aircraft are not in conflict with each other.

3.18.1 Traffic Circuit Sequencing

The aerodrome controller shall establish, maintain or adjust the spacing between aircraft in the aerodrome traffic circuit by requiring pilots to adjust their flights as necessary:

a) Extending Downwind: This may be used to fit traffic on final. The limit of the extension should be indicated by specifying a duration E.g. *"EXTEND DOWNWIND FOR..."*

b) Widening Downwind: This may be used to space aircraft on final and one on downwind. E.g. *"WIDEN DOWNWIND"*

c) Shortening Approach: Used to expedite flow. E.g. "*MAKE SHORT* APPROACH"

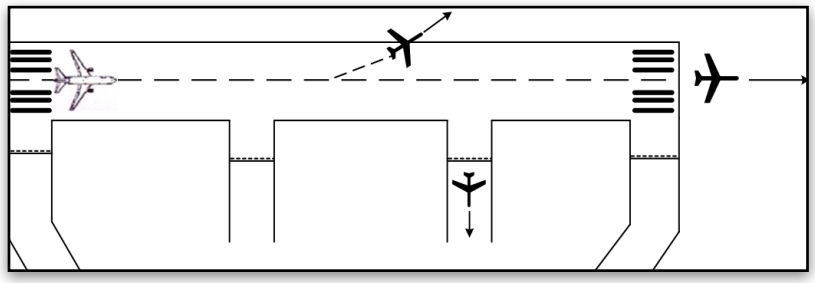
d) 360-degree Turn: This may be used for delaying action for VFR flights only. E.g. "*MAKE* LEFT THREE SIXTY; MAKE ONE ORBIT LEFT."

Note: If the instruction is given to extend a traffic-circuit leg, the extension is indefinite. The controller releases the aircraft from this extension by instructing the pilot to turn the next leg, e.g. "*Cirrus OSP, turn base.*"

3.18.2 Departures

No departing aircraft shall not be permitted to commence take-off until the preceding departing aircraft has crossed the end of the runway-in-use, or has started to turn, or until all preceding landing aircraft are clear of the runway-in-use.

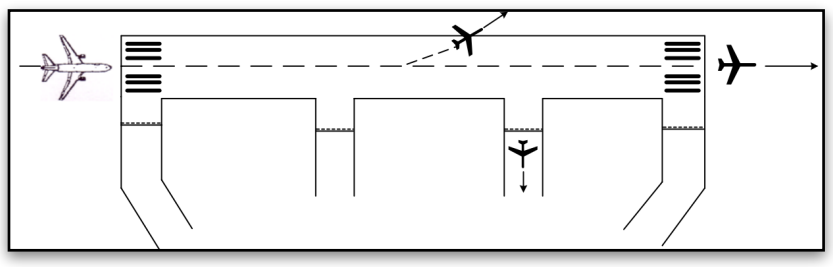
Figure 3F: Departure Separation



3.18.3 Arrivals

An arriving aircraft shall not be permitted to cross the threshold on its final approach until the preceding departing aircraft has crossed the end of the runway-in-use, or has started to turn, or until all preceding landing aircraft are clear of the runway in use.

Figure 3G: Arrival Separation



3.18.4 Visual Traffic Alerts

In order to establish pilot-maintained visual separation between two aircraft in the CTR, the TWR controller must alert one aircraft to the other. The point-out is comprised thusly:

a) aircraft identification
b) traffic clock direction
c) traffic runway position/intentions
d) request for visual report
e) avoidance recommendations (if necessary)

Visual Traffic Alert Phraseology

"<CALLSIGN>, traffic, <DIRECTION OF FLIGHT>, a <TRAFFIC TYPE> on <POSITION INFORMATION>. Report them in sight."

Example: Non-Sequenced Visual Separation

MWCR_TWR:	CAYMAN 833, traffic, westbound, a Learjet on the upwind runway 26. Report him in sight.
CAY833:	Traffic in sight, JetBlue 233.
MWCR_TWR:	CAYMAN 833, roger, maintain visual separation.

Example: Following (Sequenced) Traffic

MWCB_TWR:	N780SP, extend downwind. Traffic is on the left base, runway 09, a Cessna 172. Report them in sight.
N780SP:	Piper 0SP has the 172 in sight.
MWCB_TWR:	Piper 0SP, roger, follow that traffic, #2 for landing.

Examples: Non-Conflicting Traffic Alert

MWCR_TWR:	COLONY 119, Brac Tower, continue approach, traffic is on the left base, runway 27. Should be no factor.

In most cases of pilot-maintained visual separation, one aircraft is following another. In some instances, however, it makes sense to alert the other. Imagine, for example, separating a plane on upwind from a plane joining the downwind:

Example: Notification of Visual Separation

MWCR_TWR:	CIRRUS 0PU, traffic 10 o'clock low, MD82 lifting off from runway 08.
N590PU:	Departing traffic in sight, Cirrus 0PU.
MWCR_TWR:	N590PU, maintain visual separation.
N590PU:	Maintain visual, 0PU.
MWCR_TWR:	WORLD ATLANTIC 227, airborne time 15, traffic is 11 o'clock opposite direction, a Cirrus on long downwind, has you in sight.
WAL227:	Roger, keeping an eye out, 227.
MWCR_TWR:	WORLD ATLANTIC 227, contact Approach on 120.2.

3.18.5 Failure of Separation

Aerodrome TWR separation fails in one or more of the following instances:

a) two or more aircraft appear in danger of colliding
b) two arriving or two departing aircraft violate the guidelines set forth in 3.18.2-3.

3.18.6 Runway Incursions

A "runway incursion" is an incident where an unauthorized aircraft is on a runway. If any airplane sets a tire-wheel on a runway which Aerodrome TWR control has not authorized takeoff, backtrack, line-up, landing, or touch-and-go has committed a runway incursion. Since neither controlled Aerodrome in Jamaica has intersecting runways or taxiways on both sides of the runway, incursions are rare. Furthermore, they do not take on the gravely serious nature they do in real life. Runway incursions should be met with the same corrective actions as any failure of TWR separation.

3.18.7 Corrective Actions when Separation Failed

If separation fails or threatens to fail in any way described in 3.18.5, the controller should undertake a corrective series of actions. These are limited by the scope and methods of Aerodrome TWR control, but consist of the following:

a) Issuance of a traffic alert
b) Canceling or withholding takeoff or landing clearance (e.g. *"N780SP, CANCEL TAKEOFF I SAY AGAIN CANCEL TAKEOFF"*)
c) Suggesting of avoiding action (see below)

Avoiding Action Phraseology

> **"<CALLSIGN>, <TURN/CLIMB/DESCEND> immediately to avoid <TRAFFIC POSITION> <TRAFFIC TYPE>."**

Examples: Avoiding Action

MWCR_TWR:	UNITED 1139, turn right immediately to avoid opposite-direction traffic, Boeing 738 northbound at your level, not on my frequency.
MWCB_TWR:	CAYMAN 4422, climb immediately to avoid unidentified traffic departing runway 27.

3.19 Wake Turbulence Separation

Wake turbulence separation minima are based on a grouping of aircraft into four wake Turbulence categories (light, medium, heavy, super) and are applicable to both IFR and VFR flights except as specified in *Tables 3H* and *3I*.

Table 3H: Departure Wake Turbulence Separation

Sequence	Light	Medium	Heavy
Departing behind SUPER	3 min	3 min	2 min
Departing behind HEAVY	3 min	2 min	–
Departing behind MEDIUM	3 min	–	–

Table 3I: Arrival Wake Turbulence Separation

Sequence	Light	Medium	Heavy
Arriving behind SUPER	4 min	3 min	–
Arriving behind HEAVY	3 min	2 min	–
Arriving behind MEDIUM	3 min	–	–

Pilots operating in the following circumstances are responsible for ensuring that the spacing from a preceding aircraft of a heavier weight category:

a) VFR Arrivals
b) IFR Arrivals who are following another Aircraft visually

Controllers shall issue a caution of possible wake turbulence where deemed necessary and specifically in the following circumstances:

a) where wake turbulence separation is not being applied.

Wake Turbulence Phraseology

"<CALLSIGN>, caution wake turbulence from <ARRIVING/DEPARTING> <TRAFFIC TYPE>. Winds <DIRECTION> <SPEED>. Runway <XX>, cleared <TAKEOFF/LANDING>."

Examples: Wake Turbulence Advisements

MWCR_TWR:	ISLANDWAYS 250, caution wake turbulence from arriving 747, surface winds 270 degrees, 10 knots. Runway 26, cleared to land.
MWCB_TWR:	CARAVAN 908JL, caution wake turbulence from departing 733, surface winds 090 degrees, 10 knots. Runway 09, cleared to land.

3.20 Helicopter Operations

3.20.1 Runway Operations

When circumstances dictate, helicopters shall be cleared to use the active runway for arrival or departure as follows:

a) arriving helicopters shall be cleared to land on the active runway and then to air-taxi to the relevant parking area as necessary.

b) departing helicopters shall be cleared to air-taxi via specified routes to the holding position of the active runway

Air-Taxi Phraseology

> **"Helicopter <CALLSIGN>, air taxi <RUNWAY/HOLDING POINT> via <TAXI ROUTE>."**

Examples: Air-Taxi to/from Runway

MWCR_TWR:	HELICOPTER 7XM, Owen Roberts Tower, air taxi runway 08 via charlie.
MWCB_TWR:	HELICOPTER 8GT, landed 32, welcome to the Brac. Vacate left on alpha, air taxi to parking.

3.20.2 Non-Runway Operations

Helicopters wishing to take off or land at non-runway areas should be cleared as follows:

Helicopter Operations Phraseology

> **"Helicopter <CALLSIGN>, proceed as requested, caution <ANY EXISTING TRAFFIC/HAZARDS>."**

Example: Non-Runway Helicopter Arrival

N808GT:	OWEN ROBERTS TOWER, Helicopter 808GT is 3 to the northeast, request landing at FBO ramp.
MWCR_TWR:	HELICOPTER 8GT, Owen Roberts Tower, proceed as requested, use caution for surface traffic.

Example: Non-Runway Helicopter Departure

N227XM:	BRAC TOWER, Helicopter 227XM, at the ramp, request departure to the west to Little Cayman.
MWCB_TWR:	HELICOPTER 7XM, Brac Tower, proceed as requested, use caution.

4. Procedural Approach (APP) Control

4.1 Services Provided

A Procedural Approach (APP) control unit provides services to IFR and VFR aircraft arriving and departing within, or transiting its airspace of jurisdiction:

a) approach control service
b) flight information service
c) aerodrome service (if no TWR online)

4.2 Area of Jurisdiction and Authority

The area of jurisdiction of approach control is the relevant TMA along with all CTRs (Control Zones) within. This jurisdiction extends to all underlying CTRs and airport maneuvering surfaces when those Aerodrome TWR positions are offline or indisposed.

4.3 General Responsibilities

Approach controllers shall maintain a continuous watch over all flights operating within their airspace and shall issue instructions, information and advice to such flights in order to achieve the objectives of Approach control Service.

Approach control has responsibility for, and shall coordinate with other positions, as required, in respect of all aircraft that are:

a) transiting its airspace until such aircraft have been issued a frequency change
b) arriving that have been transferred by area control until such flights have been transferred to aerodrome control
c) departing that have been transferred by aerodrome control or have entered its airspace until such flights have been transferred to Area control or Aerodrome control.
d) sequencing of arrivals into controlled aerodromes
e) issuing of traffic information IFR/VFR and VFR/VFR as necessary

4.4 Systems Used

MWCR_APP is an entirely procedural (non-radar) position. Like a Radar position, it uses EuroScope to manage flight plans and data. At no time does the position use data from EuroScope to apply radar control techniques or separation.

4.5 Relevant Positions

Table 4A: Procedural APP Positions, Cayman Islands

Position	Callsign	Airspace	Class	Limits	ID	FREQ.
Cayman Approach	MWCR_APP	Cayman TMA	A	10,500 ft - FL245	APP	120.200
			D	1,500 ft - 10,500 ft		

4.6 Coordination

4.6.1 Aerodrome TWR

Since an Aerodrome TWR controller cannot be expected to take responsibility for APP's terminal separation plan, MWCR_TWR and MWCB_TWR must seek a "clearance valid" approval from APP before allowing a departing aircraft to taxi onto the runway. This request is APP's opportunity to point out flight plan issues or separation strategies (see Section 4.21.2 for details).

☎️ *Example: Clearance Valid Request (APP)*

MWCR_TWR:	APPROACH, Owen Roberts Tower request clearance valid, CAY600.
MWCR_APP:	TOWER, Approach, CAY600 clearance valid.
MWCR_TWR:	Roger, clearance valid.

After an aircraft departs, the TWR controller should inform the APP (or if offline, CTR) controller of the airplane's departure time:

☎️ *Example: Airborne Notification (APP)*

MWCB_TWR:	APPROACH, Brac Tower, departure, CAY4422.
MWCR_APP:	Go ahead.
MWCB_TWR:	CAY4422 airborne 13 runway 09.
MWCR_APP:	Roger.

Aircraft TAGs are transferred on EuroScope from Cayman Approach to Area Radar as normal. In reality, however, there is no systemic continuity between the two positions and thus the handoff should be a non-radar one. A non-radar handoff consists of a Handoff Estimate Report (see 4.6.3) being sent from the initial controller to the receiving controller, followed by a verbal frequency change by the initial controller.

4.6.2 Area Radar (CTR)

If Area Radar (CTR) control is online above you as an APP controller, you may coordinate two things via EuroScope's ongoing coordination feature:

a) TCP (Transfer-of-Control Point): the FIX or NAVAID at which an aircraft is to be handed over between APP and CTR.
b) TCA (Transfer-of-Control Altitude): the flight level/altitude to which an aircraft is to be cleared to climb/descend at the time of transfer between APP and CTR.

All IFR aircraft originating from the Cayman Islands and is bound for the interior airspace of the Kingston/FIR CTA may be cleared to climb to their cruise level. Arrivals to the Cayman TMA from CTR's control may have their TCA negotiated on an individual basis, workload and separation plan permitting. In the absence of mitigating circumstances, the transfer-of-control altitudes listed in *Table 4B* are good defaults.

Table 4B: Ideal TCA Levels, Cayman TMA Arrivals

Destination	TCPs (Boundary FIXes)	TCA
MWCR	NALRO • MATIS	FL240
	ALOBO • EMONA • MATIS • LEROL • DELKA	10,000 ft
	KANEX • RIKEL • ATUVI • TULEV • KARUL	11,000 ft
	NUBIS • MAMBI • ULISA	11,000 ft
MWCB	LESOM • KATAL	7,000 ft

4.6.3 Handoff Estimate Reports

All handoffs bound for an actively controlled Area (CTR) sector should be pointed out by the Procedural APP controller with an estimate report. This should be delivered no later than 10 minutes from the aircraft's ETA for the TCP/boundary, and follow the following format:

1. Callsign
2. AC Type
3. Squawk Code
4. TCP (Transfer-of-Control Point)
5. Flight Level/Altitude
6. ETA TCP (Transfer-Of-Control Point)

☎️ *Example: Procedural Estimate Reports*

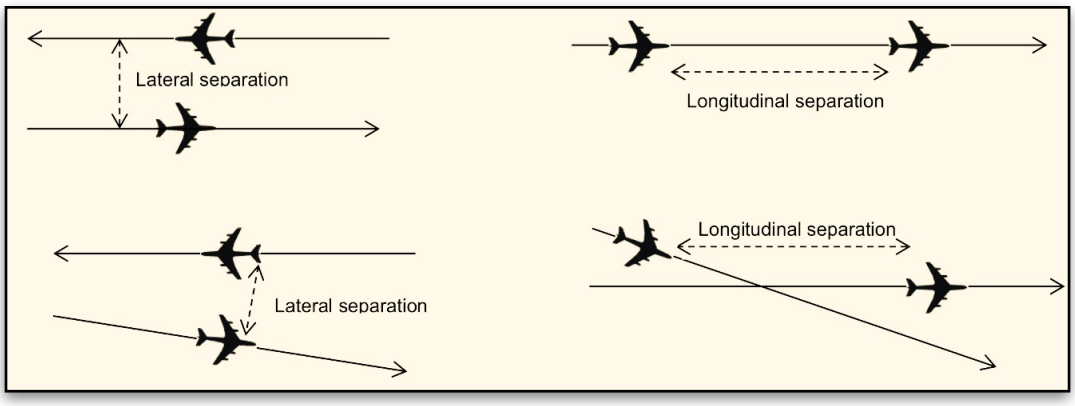
MWCR_APP: N655QS C56X SQ0704 **NALRO** FL250 1702Z

4.7 Separation Types

There are three types of separation at the command of a Procedural APP controller:

a) Lateral
b) Longitudinal
c) Vertical

Figure 4C: Horizontal Procedural Separation



4.8 Determination of Track Occupancy

The determination of the "track", other times referred to as a course, radial, route, etc., occupied or planned to be occupied by an aircraft. This determination is based off the content of the aircraft's flight plan: the radials, ARCs, NDB tracks, and maneuvers derived from the ATS routes and instrument procedures that the aircraft has filed or been assigned.

4.8.1 Use of ATS Routes & Instrument Procedures

One of the most crucial aspects of establishing or maintaining horizontal (lateral, longitudinal) separation is the adherence to ATS Routes and Instrument Procedures:

a) ATS Routes (low airways[1]): *R640, A511, B767, etc.*
b) Instrument Departures (SIDs): *NALRO2, REDBAY2, TORTUGA2, etc.*
c) Instrument Arrivals (STARs): *GORAN3, GUBEL3*
d) Instrument Approaches (IAPs): *VOR/DME 08, RNAV 08, NDB 27, etc.*

Keeping Aircraft on these published routes and Procedures gives the APP controller a clear images of the aircraft's position in combination with periodic distance reports. All of these air routes and Procedures reference specific VOR radials, NDB tracks, and RNAV positions.

Note: For a full listing of low ATS routes running through the Cayman Islands TMA, see *Figure 2N* in Section 2.16.

4.8.2 Track Relationships

In order for a Procedural APP controller to determine whether two aircraft should be separated longitudinally, laterally, or if neither is operable and vertical separation must be imposed, they must first decide how their tracks relate to each other.

4.8.3 Assumed Track Occupancy

At certain times Procedural APP should "assume" that an aircraft is established on a particular route or track even though their ATC instructions or clearances actually involve a slightly different track or route. For example, to keep an arrival on an ATS route instead of flying a STAR, the controller might instruct the pilot to proceed direct GCM or CBC after their TMA boundary FIX of entry. The "direct" track between these two NAVAIDs and the TMA boundary FIXes are identical to the tracks of the ATS routes that run between them. Thus the controller accomplishes his job of keeping aircraft on established tracks whenever possible without unnecessary confusion.

[1] the difference between an airway and an ATS "route" is inconsequential in the scope of our operations.

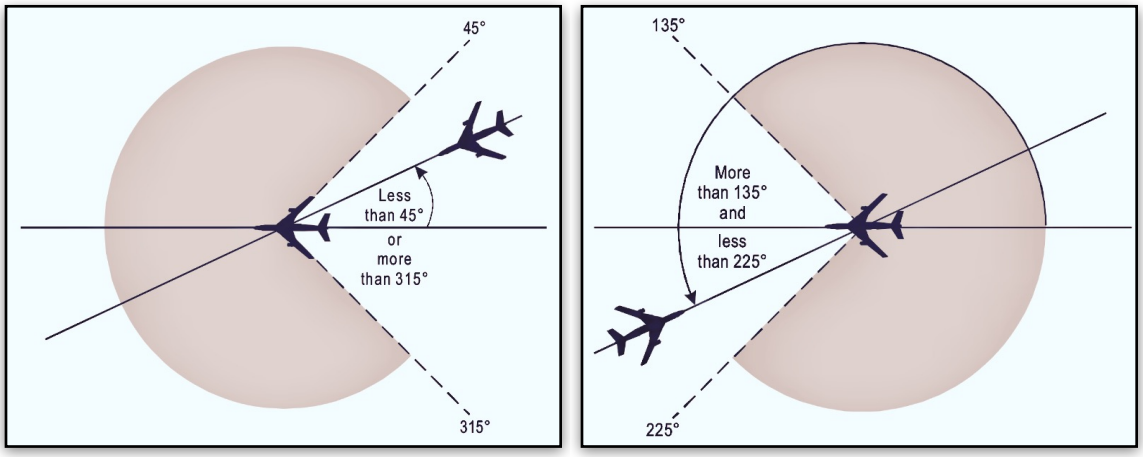
4.8.4 Reciprocal, Crossing, and Same Tracks

These relationships refer to tracks which intersect each other. The angle at which they intersect determines whether they are reciprocal (opposite), crossing (converging), or the same.

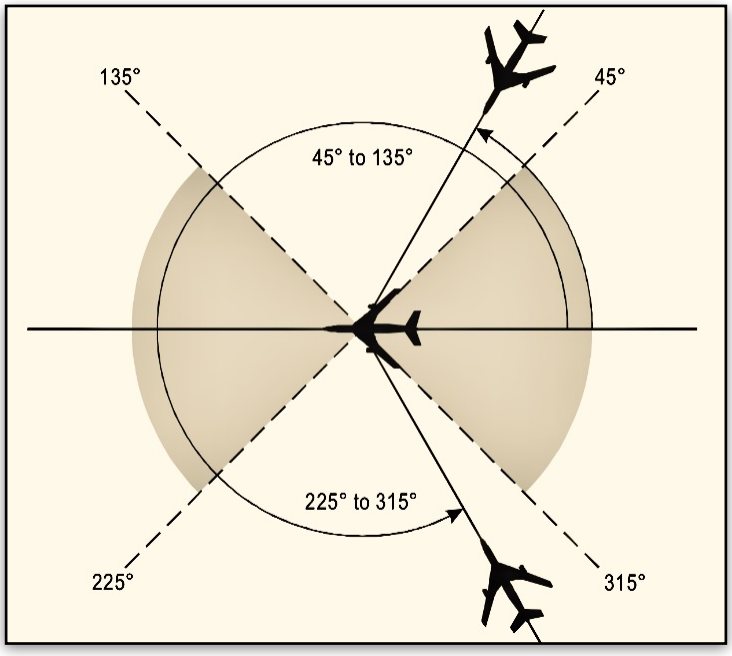
4.8.5 Divergent Tracks

These are tracks which never intersect and thus provide some degree of Lateral separation from each other. The amount of separation is determined by the type of NAVAID being referenced by the two Tracks and the position (distance) of the along along those tracks.

Figure 4D: Angular Track Relationship (Converging, Crossing, Same)



Same Track **Opposite, Reciprocal Tracks**



Crossing, Converging Tracks

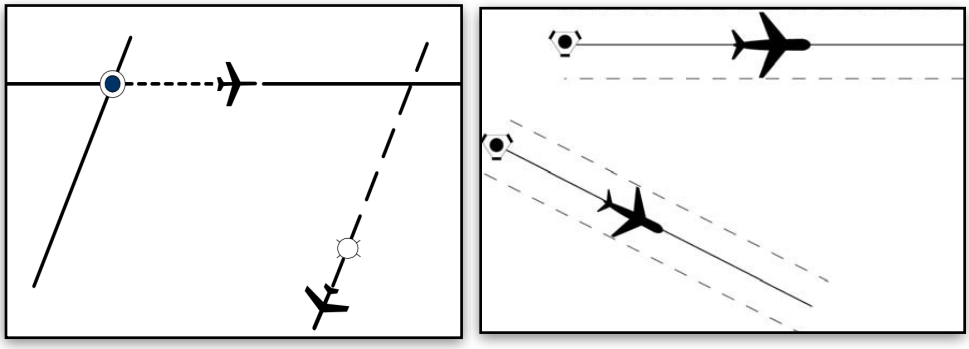
4.9 Lateral (Horizontal) Separation

Lateral separation shall be applied so that the diverging distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than a particular distance (Minima) determined by the governing body. This separating lateral distance is conferred either by reference to two different locations (waypoints) or by particular degrees of divergence or distance from the same location. These prescribed minima are built to ensure that two aircraft tracks will never intersect and are laterally distant enough from each other to be safe:

4.9.1 Different Geographic Locations

This separation condition is very self-evident, and is confirmed by reference to different geographic locations: via position reports, which positively indicate the aircraft are over different geographical locations (e.g. Grand Cayman and Cayman Brac) as determined visually or by reference to a navigation aid, and are on tracks that will never converge (see *Figure 4E*)...

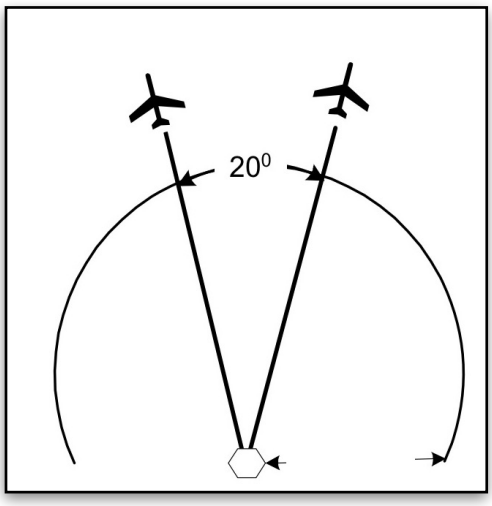
Figure 4E: Different Geographic Locations



...OR, by use of the same NAVAID (VOR, NDB, or Reporting FIX): By requiring aircraft to fly on specified tracks from a NAVAID which are separated by a minimum amount appropriate to the type of NAVAID (see 4.9.2 - 4.9.4).

4.9.2 VOR Radials

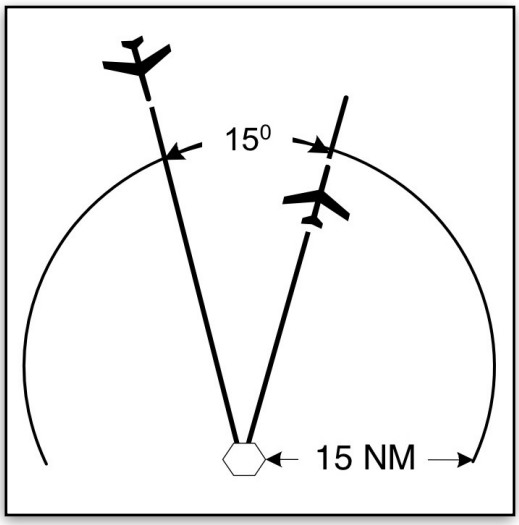
Figure 4F: VOR Radial Separation



To use VOR-based lateral separation, both aircraft must be outbound from the VOR, and reported established on radials that diverge by 20 degrees or more (see *Figure 4*C). Keep in mind that the ATS routes (airways) that emanate from the GCM VOR are actually VOR radials themselves. Hence: if two IFR departures were leaving MWCR via the L465 (R-351) and the G448 (R-001), lateral separation would be impossible since those two radials are separated by less than 20 degrees (R-351 and R-001 are separated by 10 degrees). However, if you switched the aircraft on the L465 to the G877 (R028), lateral separation would be assured.

4.9.3 VOR/DME Radials

Figure 4G: VOR/DME Separation



Using VOR/DME separation involves comparing the Lateral divergence between two radial tracks originating from a VOR/DME station, referenced to the aircrafts' DME distances from that station. As long as at least one of the two Aircraft have reported or been observed crossing 15 DME, the other aircraft's track must diverge laterally by just 15 degrees, an improvement over the 20 degrees required by using VOR radials alone (4.9.2). It also differs from that method in that it can be used when one aircraft is outbound from the VOR/DME station and the other is inbound to it.

4.9.3 NDB Tracks

Using specified tracks of an NDB - Both aircraft are established on tracks from the NDB which diverge by at least 30 degrees.

4.9.4 FIX or other Reporting Point

Using specified courses leading from a FIX, intersection or RNAV waypoint, both aircraft are established on tracks diverging by at least 45 degrees.

Figure 4H: NDB Track and FIX Track Lateral Separation Minima

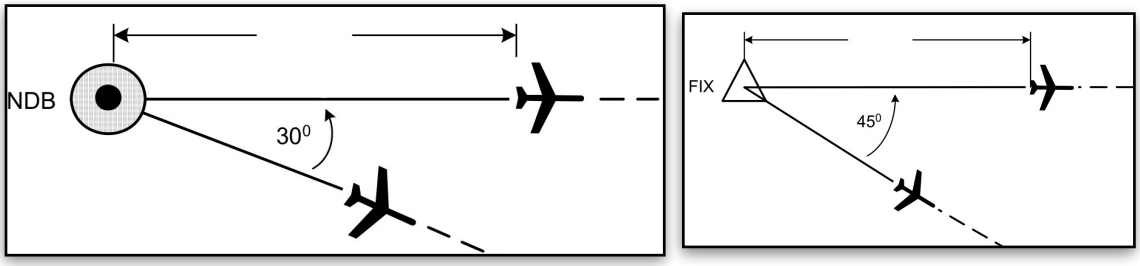


Table 4I: Lateral Separation Minima (Same Location)

Type of Reference	Minima
VOR Radial	20° Divergence
VOR/DME	15° Divergence *(1 A/C 15 DME)*
NDB Track	30° Divergence
FIX/Intersection Track	45° Divergence

4.10 Longitudinal (Horizontal) Separation

Longitudinal Separation is for use with aircraft which are on converging, crossing, reciprocal, or same tracks:

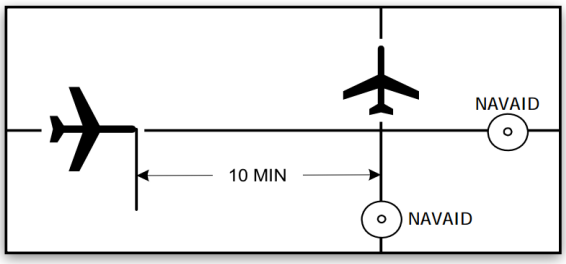
a) Longitudinal separation based on time or distance shall be applied so that the spacing between the estimated positions of the aircraft being separated is never less than the specified minima

b) Longitudinal separation between aircraft following the same or diverging tracks may be maintained by applying speed controls.

c) Whenever a faster aircraft is behind another on the same track and at the same level, speed controls must be employed to ensure that the required separation minimum is maintained

4.10.1 Crossing (Converging) Tracks

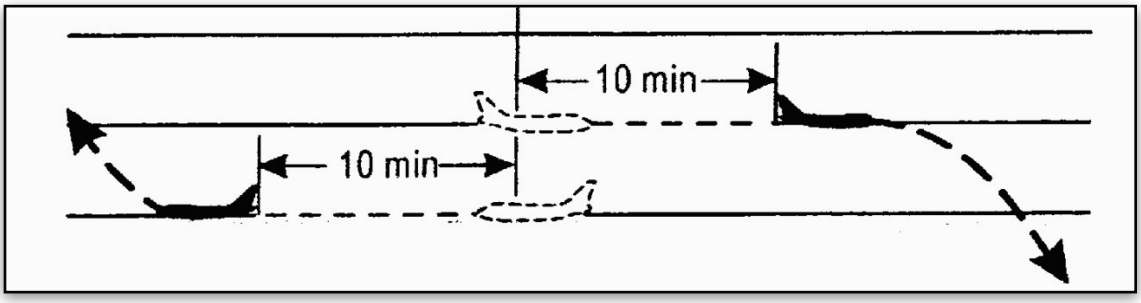
Figure 4J: Crossing-Tracks Longitudinal Minima



Aircraft on crossing tracks must remain at least 10 minutes from the point of intersection of the tracks. This point is also known as the point of convergence. For two aircraft simultaneously inbound to the same airport, the airport is the point of convergence.

4.10.2 Opposite (Reciprocal) Tracks

Figure 4K: Reciprocal-Tracks Minima for Climbing and Descending



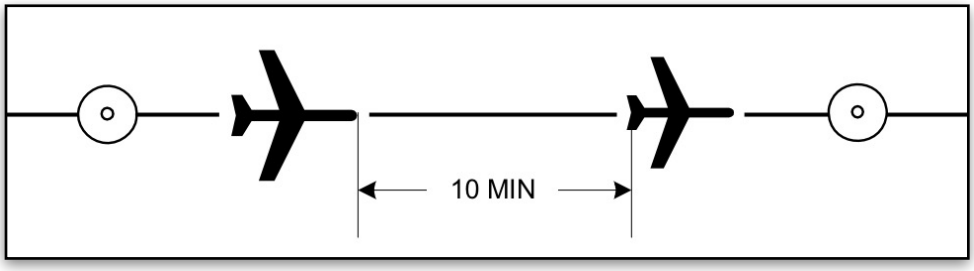
Vertical separation shall be provided for at least 10 minutes prior to and after the estimated time of passing (see *Figure 4K*) unless it is confirmed that the aircraft have actually passed each other by:

a) visual sighting report from both pilots (by day only), or
b) position reports over the exact same reporting point.

Note: This scenario applies mainly to inter-TMA flights (see Section 4.22.2).

4.10.3 Same Track

Figure 4L: Same-Track Longitudinal Minima



Aircraft operating on the same track between NAVAIDs must remain at least 10 minutes or 20 nautical miles (NM) from each other.

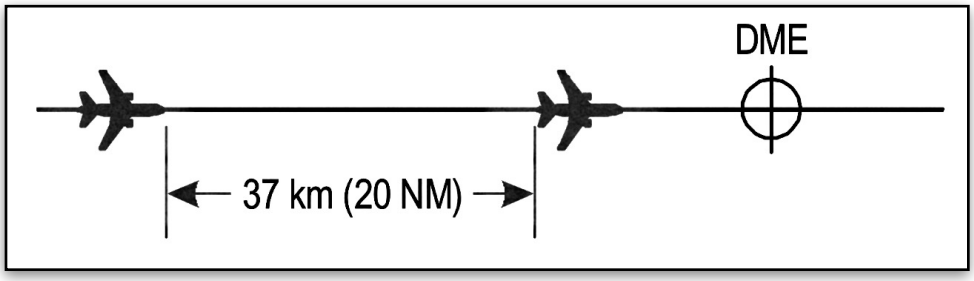
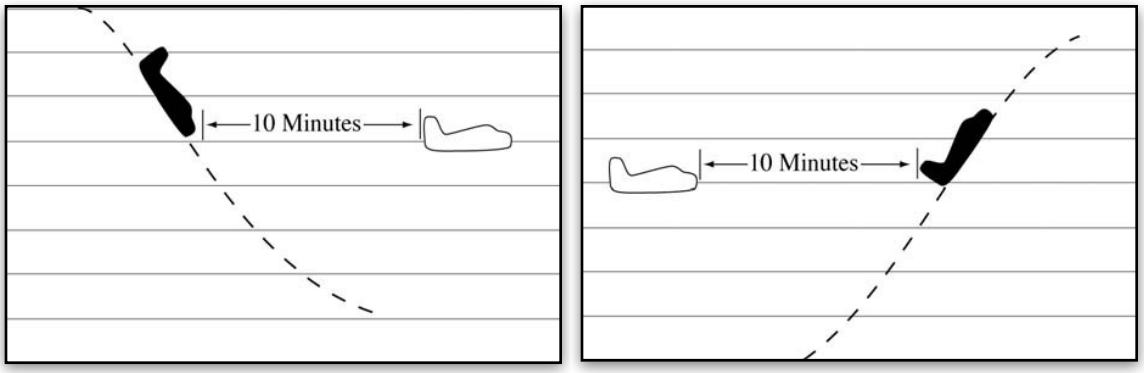


Figure 4M: Same-Track Longitudinal Minima, Climbing and/or Descending



Aircraft on the same track without vertical separation must remain at least 10 minutes (as estimated) or 10 NM (DME reported) apart while vertical separation doesn't exist. The applies to most simultaneous departures inbound to the same boundary FIX in the Cayman TMA. Since Departures are rarely held for traffic longer than 5 minutes on the ground, Speed control or route adjustments are the best way to ensure this type of separation.

Table 4N: Longitudinal Separation Minima

Track Relationship	Minima
Converging Tracks	Both aircraft **10 minutes** from Point of Convergence
Same Track	Aircraft at least **10 minutes** or **20 NM** from each other
Reciprocal Tracks	Vertical separation required for **10 minutes** following the aircraft passing each other

4.10.4 Critical Position Reports

Some positions (observed visually or pilot-reported) must be recorded by the Cayman APP controller in the aircraft Data TAG for cross-reference on the `EuroScope` client. These notes and their expected formatting is are listed in *Table 4O*.

Table 4O: Critical Position Reports/Observations

DEPARTURE INSTANCE	TAG RECORD FORMAT
OBSERVED Airborne, Departing	**DEP0345**
OBSERVED leaving TWR visibility zone, or REPORTED 15 DME GCM (if requested)	**D15/2312**
REPORTED 30 DME GCM	**D30/0030**
ETA TMA boundary point/TCP	**NALRO/1443**
REPORTED Crossing TEXAM (Domestic IFR only)	**TEXAM/1132**
ARRIVAL INSTANCE	**TAG RECORD FORMAT**
OBSERVED Passing TMA boundary/TCP	**ATUVI/0545**
REPORTED 30 DME GCM	**D30/2230**
REPORTED 15 DME GCM and/or... OBSERVED Crossed into TWR visibility zone	**D15/0131**
ETA GCM/CBC	**ARR0333**

Note: The "Observed airborne, departing" time should be logged as soon as the departing aircraft is observed airborne. The "15 DME GCM" position for departures should be logged as soon as the aircraft is observed leaving the TWR radar visibility area or if the pilot reports 15 DME GCM. The "Passing TMA Boundary/TCP" time should be logged when the aircraft is seen to pass the TMA boundary from an outside FIR and thus disappearing from the ACC radar visibility area. The "15 DME GCM" position for arrivals should be logged when the aircraft is seen entering the TWR radar visibility area or if the pilot reports 15 DME GCM.

4.10.5 Longitudinal Traffic Alerts

Aircraft that are being separated (or attempted) longitudinally should be issued alerts regarding the conflicting aircraft if the separation between the two is any less than 15 minutes. These alerts should follow the following format:

a) aircraft callsign
b) nature of conflict
c) relative Track/Course of conflicting aircraft
d) reported/cleared level of conflicting aircraft
e) conflicting aircraft's estimate for point of convergence
f) further information/instructions, as necessary

Longitudinal Traffic Alert Phraseology

"<CALLSIGN>, conflicting traffic is <TRACK RELATIONSHIP> a <TRAFFIC TYPE>, <ALTITUDE INFORMATION>, <TIME OR ESTIMATE INFORMATION>."

Example: Longitudinal Traffic Alert

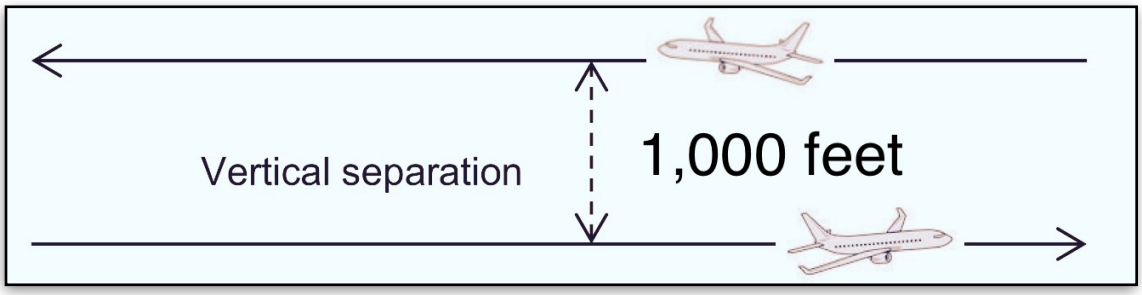
MWCR_APP:	WESTJET 2790, conflicting traffic is same-direction, a Boeing 733, left 14,000 for 1,500. Reported 30 DME at 2220Z, estimates GCM at 2234Z.
MWCR_APP:	AMERICAN 821, conflicting traffic is on converging track, an Airbus A320, left 17,000 for 3,000, estimates GCM at 0123Z.

4.11 Determination of Level Occupancy

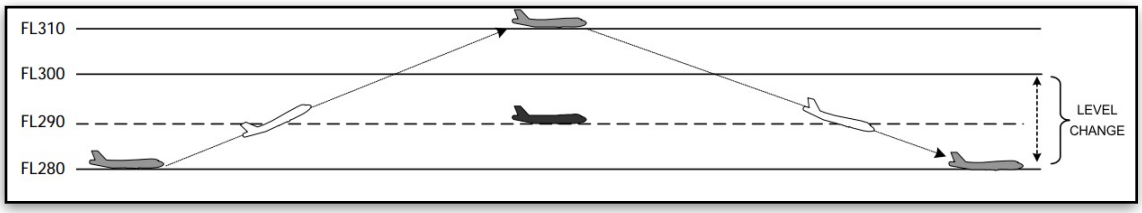
Vertical separation is applied in the Procedural APP environment by comparing the occupied levels (or altitudes) between two aircraft. The level occupied by an aircraft is the last altitude or flight level they reported "level" at. If an aircraft is climbing or descending, it continuously occupies all levels between the last one he was assigned and the new assigned level until they have reported "level" there.

4.12 Vertical Separation

Figure 4P: Vertical Separation Minima

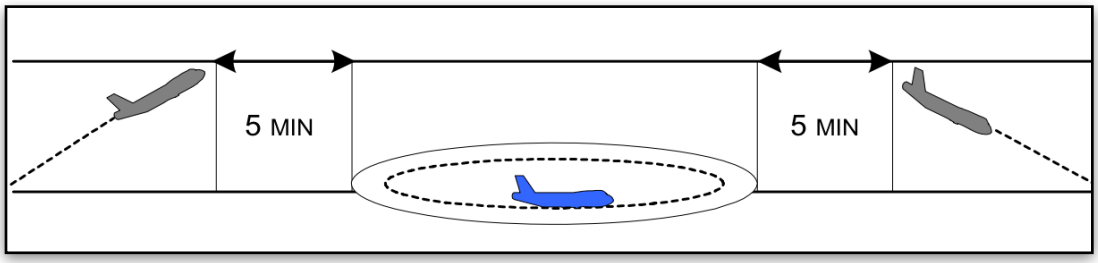


Aircraft not horizontally (longitudinally, laterally) separated shall be vertically separated when occupying different altitudes at least 1,000 feet apart (see graphic above). Aircraft in level change (climbing, descending cannot be vertically separated (see graphic below).



4.13 Holding Separation (Vertical/Lateral)

Figure 4Q: Holding Separation



Except where lateral separation exists, vertical separation shall be applied between aircraft holding in flight and other aircraft, whether arriving, departing or enroute whenever the other aircraft concerned are within 5 minutes flying time from the holding area (see *Figure 4Q*).

4.14 Positive Terminal Control Methods

4.14.1 Methods

The following ATC methods may be used by the Procedural APP controller to positively affect the aforementioned standards and minima of separation:

a) altitude adjustments (Vertical)
b) routing adjustments (Lateral)
c) speed control (Longitudinal)
d) holding (approach sequencing)

Altitude Adjustment Phraseology

"<CALLSIGN>, descend and maintain <ALTITUDE>."
"<CALLSIGN>, when ready, descend at pilots discretion to cross <WAYPOINT> at <ALTITUDE>. Report leaving <ORIGINAL ALTITUDE>."

4.14.2 Altitude Adjustments

Note: Within the Cayman Islands TMA, 1,500 ft is the lowest altitude that can be assigned unless the aircraft is taking off or landing imminently.

Example: Altitude Adjustment

MWCR_APP:	JETBLUE 765, descend and maintain 3,000.
MWCR_APP:	DELTA 861, descend to cross GCM at 3,000.

Depending on the situation, an APP controller can append one or both of the following discretionary components to an altitude adjustment/instruction:

a) "When Able", which allows the pilot to begin the climb/descent at the time of their choosing
b) "At pilot's discretion", which allows the pilot total control in his climb/descent gradient

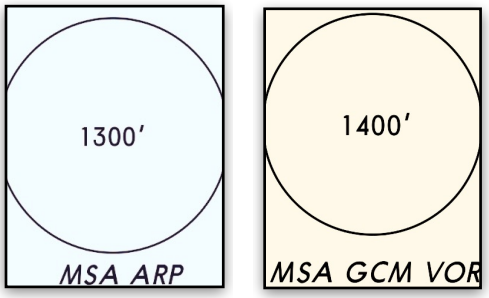
Example: Discretionary Altitude Instructions

MWCR_APP:	CAYMAN 505, when ready, descend at pilot's discretion to 1,500. Report leaving 7,000. QNH 1013.
MWCR_APP:	C-GAPT, descend at pilot's discretion to 1,500. Report the field in sight or the GCM VOR, whichever comes first.

Note: When using "when able", it is usually smart to ask the pilot to report leaving their present level so that you are aware of that level being vacated.

4.14.3 Minimum Sector Altitudes (MSA)

Figure 4R: Minimum Sector Altitude (MSA)

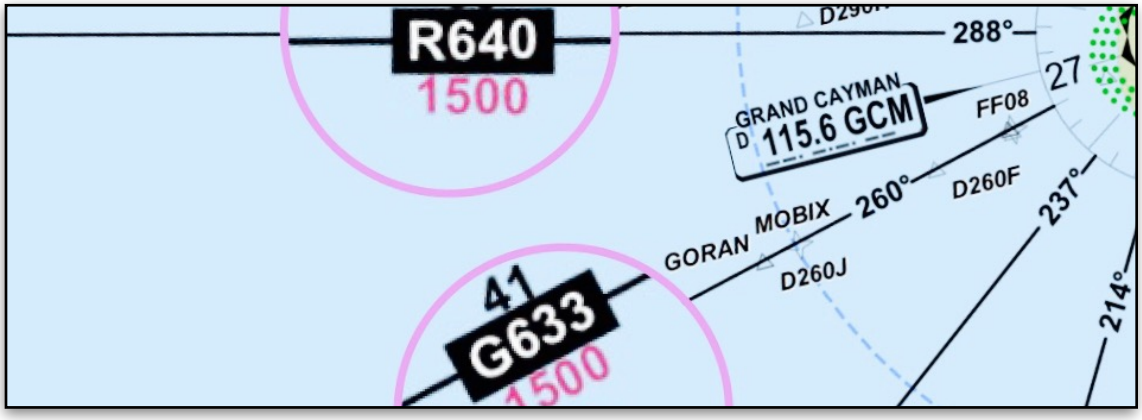


The Minimum Sector Altitude is the lowest altitude which may be used which will provide a minimum clearance of 1,000 ft above all objects located in the area contained within a sector of a 25 NM radius centered on a NAVAID or ARP (Aerodrome Reference Point).

4.14.4 Minimum Enroute Altitudes (MEA)

The Minimum En-route Altitude (MEA) is the minimum altitude for an en-route segment (ATS route). This altitude provides for compliance with the airspace structure as well as required obstacle/terrain clearance.

Figure 4S: Minimum Enroute Altitude (MEA)



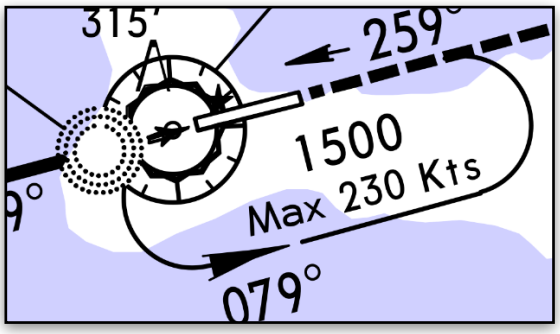
4.14.5 Minimum Off-Route Altitude (MORA)

If an aircraft is off an ATS route or published procedure and not within a MVA sector, the GRID MORA provides terrain and man-made structure clearance within the section outlined by latitude and longitude line. The Grid MORA value clears all terrain and man-made structures by 1000 ft in areas where the highest elevations are 5,000 ft MSL or lower and by 2,000 ft in areas where the highest elevations are 5,001 ft MSL or higher.

Figure 4T: Minimum Off-Route Altitude (MORA)

4.14.6 Minimum Holding Altitude (MHA)

Figure 4U: Minimum Holding Altitude (MHA)



The Minimum Holding Altitude (MHA) is the lowest altitude prescribed for a holding pattern that assures navigational signal coverage, communications, and meets obstacle clearance requirements. Not all holding patterns have a published MHA. See *Figure 4U* for a graphical example.

4.14.7 Routing Adjustments

Procedural Approach control can manipulate an aircraft's lateral path by making changes to their flight plan and routing:

Example: Routing Amendment

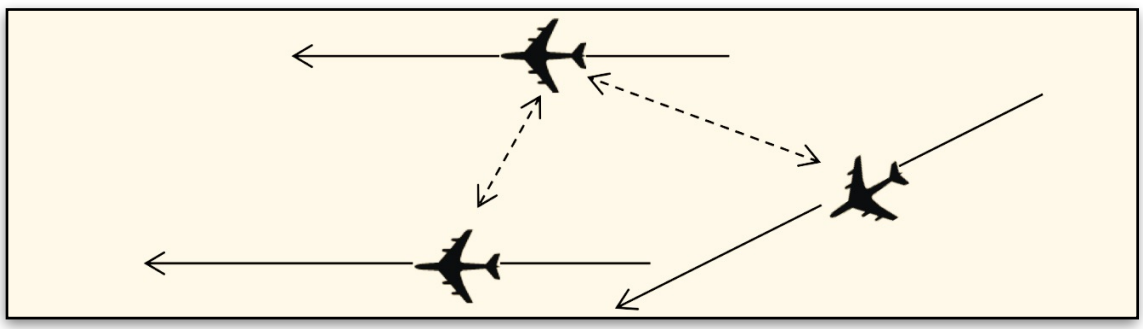
MWCR_APP:	JETBLUE 765, after ATUVI proceed direct GCM.

Apart from changing the order of their planned waypoints, one can also ask an aircraft to track inbound or outbound on a specific VOR radial:

Example: Radial Assignment

MWCR_APP:	WESTJET 2790, are you able to track a specific radial?
WJA2790:	Affirmative able to track radial, WestJet 2790
MWCR_APP:	WESTJET 2790, track inbound GCM, radial 340. Inbound course 160. Report established.
WJA2790:	Track inbound GCM radial 340, 2790.

Note: Instructing or permitting an aircraft to go "Direct to" a waypoint or NAVAID from its present position is unwise in a procedural airspace because an aircraft's precise location is so rarely known and the situation becomes murkier when an aircraft leaves an ATS route or VOR radial for a disparate waypoint. This is practical only directly after an aircraft has reported position over a NAVAID or DME colocation. See Section 4.19.8 for details.



4.14.7 Speed Control

Speed control is initiated by Procedural APP control as normal, described below. However, in the non-radar environment, temporary speed *restrictions* based on DME or altitude are most effective if speed control is absolutely necessary.

Speed Control Phraseology

"<CALLSIGN>, <REDUCE/INCREASE SPEED> <XX> knots or <LESS/GREATER>."
"<CALLSIGN>, do not exceed (or maintain) <XX> knots <ABOVE/BELOW> <ALTITUDE>."

Example: Speed Control

MWCR_APP:	JETBLUE 765, report indicated airspeed.
JBU765:	Indicating 260, 765.
MWCR_APP:	JETBLUE 876, reduce speed to 240 knots or less.

Note: The range of speeds which you may assign to an arriving aircraft is limited by their present altitude and/or proximity to their destination airport, as detailed in *Table 4V*.

Table 4V: Speed Control Guidelines

Aircraft Type	Distance from DEST.	Minimum IAS Assignable
Turbojet	-20 NM	170 Knots
	20+ NM	210 Knots (-10,000 ft)
		250 Knots (10,000+ ft)
Turboprop	-20 NM	150 Knots
	20+ NM	200 Knots
Propeller	ALL	150 Knots

4.15 Validation of Separation, Complex Strategies, & Conflict Monitoring

Regardless of whether a controller is applying vertical, lateral, longitudinal, or composite separation between two aircraft, we must establish what constitutes evidence in supporting the validity of our applied separation. Separation has not been achieved in reality unless the controller can produce the supporting evidence behind their strategy.

4.15.1 Lateral Separation

Lateral Separation between two aircraft can be evidenced in two different ways:

i) **Position reports at, or in relation to, two disparate geographical locations:** aircraft report positions in relation to two different geographical points (GCM VOR and CBC NDB, for example) that are clearly laterally separated from one another. An example would be two arriving aircraft, one reporting 15 DME GCM inbound and the other reporting overhead BETAR inbound CBC. Analyzing the relationships between the two tracks would be pointless because they have no relationship. The lack of a lateral conflict is self-evident because the two tracks do not share a common origin and terminate at two geographical positions about 100 miles from each other. This is the most essential kind of lateral Separation because it applies to any two aircraft in disparate corners of your TMA airspace that are clearly no conflict to each other but the Separation cannot be quantified or explained further than "one is at Location A and the other is at the laterally distant Point B."

ii) **Position reports which establish aircraft on diverging tracks from a common origin:** The aircraft report established on tracks originating from a single geographical location (VOR, NDB, waypoint) that diverge by the specified minima. This is not the sort of separation that a controller continuously monitors and cajoles like a longitudinal scenario. The separation is established explicitly and deliberately by the Assignment of the aircraft to two tracks which diverge by a concrete arc. If the two aircraft join their assigned tracks leading from the origin (their departure aerodrome or TMA entry FIX) Nx report as much, their separation is self-evident. Also remember that two aircraft on diverging tracks from a common origin actually become more laterally distant the farther they get along these diverging tracks. For example, two aircraft departing GCM at roughly the same time on the 340-degree and 020-degree radials, respectively, are much further from each other at 20 DME than they are at 5 DME.

4.15.2 Longitudinal Separation Validation

Aircraft with longitudinal traffic risks/conflicts should have their separation validated as soon as possible after initial contact and monitored as often as possible while they are in your terminal airspace. Longitudinal Separation between two aircraft can be evidenced in the following ways:

i) **For crossing or converging-track aircraft:** Two aircraft estimates which place them at their arrival at the point of convergence at least 10 minutes apart. E.g, if two aircraft are inbound MWCB and one is estimating CBC at 0145Z, the other should be estimating CBC at 0135Z or earlier, or 0155Z or later.

ii) **For same-track aircraft:** two reports at an identical reporting point at least 10 minutes apart. E.g., if two aircraft inbound MWCR via the G448 and one reports 30 DME at 2313Z, the next aircraft should report 30 DME no sooner than 2323Z.

4.15.3 Longitudinal Separation Monitoring

The official records for validation of Longitudinal Separation as defined in 4.19.2 are the EuroScope-generated estimates and the pilot position reports. These should be inputted into the ETA/RPT (Estimate/Report) field of EuroScope's Flight Plan List as described in 4.10.4. Unofficially, you may monitor the status of potential Longitudinal conflicts using EuroScope's CARD (Conflict and Risk Display) menu (See *Figure 4W*).

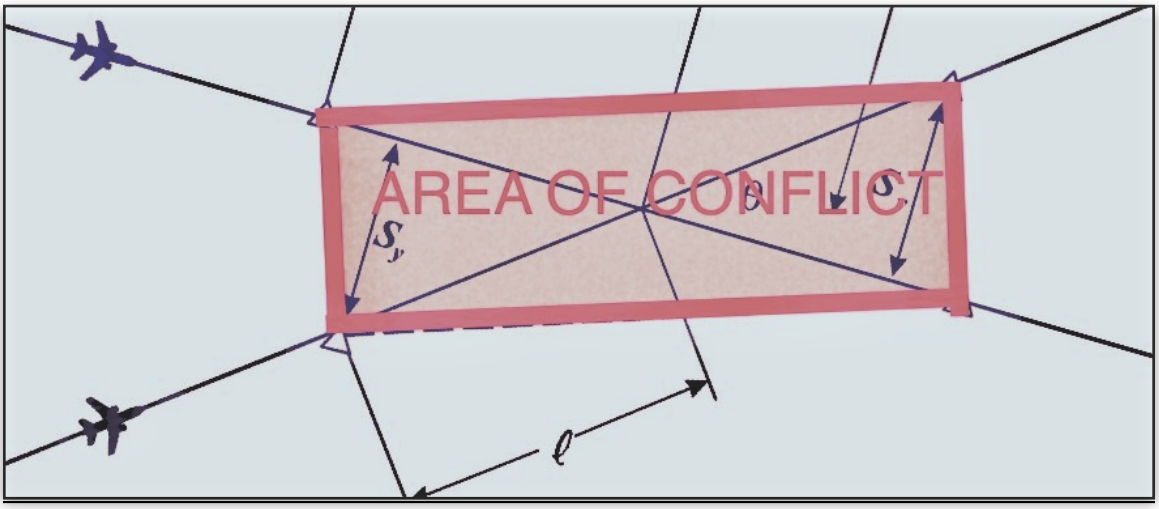
Figure 4W: EuroScope Flight Plan List & CARD List

4.15.4 Validation of Vertical Separation

Vertical separation between two aircraft can only be evidenced by two aircraft reporting level at, or passing through, altitudes or flight levels which are at least 1,000 feet apart. See Section 4.11 for further explanation of how occupied levels are determined.

4.15.5 Composite Separation for Arrivals

Longitudinal Separation is an excellent choice when two aircraft enter the Cayman TMA spaced out by at least 10 minutes. If this is the case, both can be issued their descent clearances as normal. However, if two aircraft on the same or converging tracks enter the TMA less than 10 minutes apart or are estimated to arrive at the same airport less than 10 minutes apart, speed control is, in some cases, out of the question. Speed control is out of the question two separate two descending arrivals. Thus, if two arrivals are bunched up longitudinally between the TMA boundary and their arrival airport you must use vertical separation:



Example: Descending Arrivals without Longitudinal Separation

CAY2107 - IFR		**B738/L**
CITYPAIR	**CFL**	**Filed Route**
KMIA - MWCR	350	MTH G448 TADPO UG448 ATUVI GORAN3

DAL687 - IFR		**MD88/L**
CITYPAIR	**CFL**	**Filed Route**
KATL - MWCR	350	KARTR MTH TADPO UG448 UVA UG448 GCM

CAY2107: CAYMAN APPROACH, Cayman 2107 is 10 north of ATUVI, through 14,000 for 11,000, bravo onboard.

MWCR_APP: CAYMAN 2107, Cayman Approach, good day. After ATUVI proceed to GCM. Descend to 1,500, report 30 DME GCM.

CAY2107: Down to 1.5, call 30 DME GCM, 2107.

DAL687: CAYMAN APPROACH, Delta 687 is through 15,000 for 11,000, 10 north of ATUVI. Bravo onboard.

MWCR_APP: CAYMAN 2107, report altitude leaving.

CAY2107: Cayman 2107 is passing through 8,000 feet.

MWCR_APP: DELTA 687, Cayman Approach, good day. Conflicting traffic is same-track, a Boeing 738, left 8,000 for 1,500. Crossed ATUVI 3 minutes ago. Descend and maintain 9,000, report 30 DME GCM.

DAL687: Stopping at 9,000, call you 30 DME GCM, copy traffic information, 687.

CAY2107: Cayman 2107 is passing 30 DME GCM.

MWCR_APP: CAYMAN 2107, roger, report altitude passing.

CAY2107: Passing 5,000, Cayman 2107.

MWCR_APP: **Cayman 2107, roger, report 15 DME GCM**

CAY2107: **Call 15 DME, 2107**

MWCR_APP: **Delta 687, descend and maintain 6000.**

DAL687: **Down to 6,000, Delta 687**

DAL687: Delta 687 is 30 DME GCM.

MWCR_APP: DELTA 687, roger, next report 15 DME GCM.

DAL687: Call 15 DME, 687.

CAY2107:	Cayman 2107 is now 15 DME GCM.
MWCR_APP:	CAYMAN 2107, roger, report altitude passing.
CAY2107:	Passing 3,000, 2107.
MWCR_APP:	CAYMAN 2107, roger, report the field in sight or the GCM VOR, whichever comes first.
CAY2107:	We'll call the field or the VOR, 2107.
MWCR_APP:	DELTA 687, descend and maintain 4,000.
DAL687:	Down to 4,000, 687.

CAY2107:	Field in sight, Cayman 2107.
MWCR_APP:	CAYMAN 2107, cleared visual approach runway 08. Join and report left downwind.
CAY2107:	Cleared visual 08, call you left downwind, Cayman 2107.

DAL687:	Delta 687 is 15 DME GCM.
MWCR_APP:	DELTA 687, descend and maintain 3,000. Report the field in sight or the GCM VOR, whichever comes first.
DAL687:	Down to 3,000. We'll call whichever comes first, 687.
CAY2107:	Passing the numbers on downwind, Cayman 2107.
MWCR_APP:	CAYMAN 2107, contact Tower on 118.0, good day.

DAL687:	Field in sight, Delta 687.
MWCR_APP:	DELTA 687, cleared visual approach runway 08. Join and report left downwind. Traffic on short final 08.
DAL687:	Cleared visual, call you left downwind 08, 687.

DAL687:	Delta 687 is left downwind runway 08.
MWCR_APP:	DELTA 687, contact Tower on 118.0, good day.

Note: Seeing plainly that these two aircraft would enter the TMA less than 10 minutes apart, he knows he must vertical separation. This means keeping the second aircraft (DAL687) above the last altitude/level that the first aircraft (CAY2107) has reported leaving. CAY2107 initially reports descending through 14K, so this is the lowest the controller can give the second aircraft once it calls in. In order to make further descent available to DAL687, the controller asks CAY2107 initially to report passing 8,000 feet rather than a DME distance. Each time the controller receives an updated passing altitude from CAY2107 he issues a new altitude restriction to DAL687. The only exception is the controller's final descent issued to DAL687 (to 1,500 ft) which is not corroborated by an altitude report from CAY2107. This is because at that time CAY2107 has entered the Owen Roberts CTR airspace and has become Tower-Visible.

4.16 Active Instrument Procedures

4.16.1 Types of Procedures

The following is an inventory of the currently commissioned Instrument Procedures used in the Cayman Islands:

a) Standard Instrument Departures (SIDs) [MWCR only]
b) Standard Terminal Arrival Routes (STARs) [MWCR only]
c) Instrument Approach Procedures (IAPs)
    a) VOR, VOR/DME
    b) NDB
    c) RNAV (GNSS)

4.16.2 SIDs (Standard Instrument Departures

SIDs are assigned or approved prior to clearance by the Aerodrome TWR controller. APP may recommend or mandate a particular SID to TWR for assignment if the situation calls for it (to create lateral or longitudinal separation).

4.16.3 STARs (Standard Terminal Arrival Routes)

One DME ARC transition STAR exists for both of the VOR/DME approaches at MWCR. These STARs function identically to the ones in Jamaica (KEYNO1, LENAR3, etc.) but have much more reason to be used in this non-radar environment

4.16.4 IAPs (Instrument Approach Procedures)

Note: "Default" approaches are in **bold/green**.

Table 4X: Instrument Approaches, Cayman Islands TMA

Approach	IAF(s)	IF	FAF/ALT	MDA
VOR/DME 08	GCM	GORAN	D4.3/R260 1,500 ft	520 ft
VOR 08	GCM	----	1,500 ft	560 ft
~~NDB 08~~	~~ZIY~~	----	1,500 ft	610 ft
RNAV (GNSS) 08	ALONA VODAK	MOBIX (IF/IAF)	SASER 1,500 ft	530 ft
VOR/DME 26	GCM	GUBEL	D5.9/R080 1,500 ft	520 ft
VOR 26	GCM	----	1,500 ft	560 ft
RNAV (GNSS) 26	TAGUN OLIMA	PODIS (IF/IAF)	AMBOR 1,500 ft	390 ft
NDB 27	CBC	----	1,500 ft	520 ft
RNAV (GNSS) 27	LETOS DUPEN	BESAR (IF/IAF)	RAGIS 1,500 ft	440 ft
RNAV (GNSS) 09	REVAK ADROS	TALES (IF/IAF)	VIVIS 1,500 ft	330 ft

4.16.5 Approach FIXes & Segments

A competent Approach controller should be familiar with all of the types of Instrument Approaches in their TMA, along with the components thereof:

A. IAF (Initial Approach Fix): the IAF marks the initial segment (start) of an instrument approach procedure. The initial segment brings the pilot to the Intermediate Segment of the approach. The IAF is usually a VOR/NDB from which a procedure turn or DME ARC springs, or a conveniently located off-field waypoint. Often times an approach will have more than one IAF, offering initial approach segments from several different angles. VOR and NDB approaches only have an IAF. RNAV approaches and VOR/DME approaches, however, may have an IF and FAF:

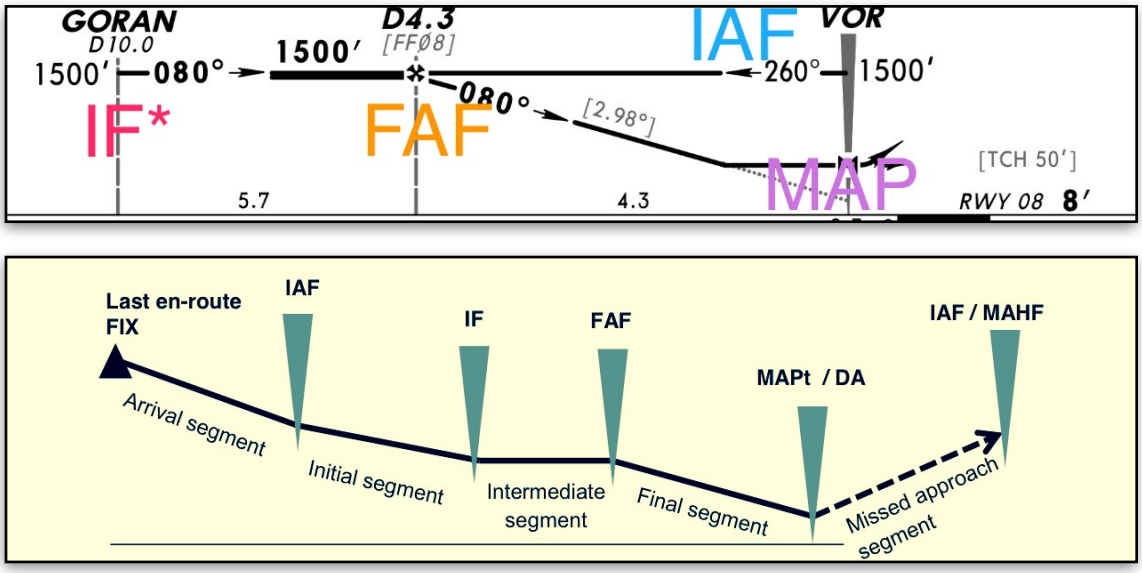
B. IF (Intermediate FIX): the IF marks the intermediate segment (or "straight-in" segment) of a VOR/DME or RNAV approach, in which a pilot positions the aircraft for final descent to the airport. Note that the VOR/DME 08 and 26 approaches, there is no IF, as the approach can only be started from the GCM VOR, GORAN/GUBEL being the missed approach holding point (MAHP). However, if the GORAN3/GUBEL3 arrivals are used for the straight-in, GORAN/GUBEL become the IF.

C. FAF (Final Approach FIX): the final approach segment of a RNAV or VOR/DME approach is marked by the FAF. Marked on charts by a Maltese cross, this is the point at which an aircraft should begin its final descent for landing.

D. MAP/DA (Missed Approach Point/Decision Altitude): instrument approaches include two conditions for a missed approach point. There is both a Decision Altitude/Height, the lowest a pilot can descend without visual reference, and a Missed Approach Point, at which one must go missed if no visual reference.

E. MAHF/MAFP (Missed Approach Holding FIX/Point): thus is the point to which an aircraft will fly and commence a published hold in a missed approach procedure.

Figure 4Y: Approach FIXes & Segments



4.16.6 Approach Minimums

Figure 4Z: Instrument Approach Minimums

STRAIGHT-IN LANDING RWY 08 LNAV MDA(H) A/B: 610′(602′) C/D: 710′(702′)			Max Kts	CIRCLE-TO-LAND MDA(H)
		ODALS out		
A	1200m	1600m	100	610′(602′) -1600m
B			135	
C	3200m		180	710′(702′) -3200m
D	3600m		205	710′(702′) -3600m

Decision heights/altitudes (DA) and or Minimum descent Altitudes (MDA) are published on instrument approach procedure Charts to indicate how low an aircraft can descend in an approach without visual reference (to the field) before the pilot must initiate a go-around. There are several different categories of minimums. Nearby these minimums, an IAP chart will usually contain vertical profile information.

Note: In addition to minimum/decision heights/altitudes, there are also published visibility minima (see *Table 4A1*).

Table 4A1: IAP Visibility Requirements, Cayman Islands

Approach	Min. Visibility	
	CAT. A/B	CAT. C/D
VOR/DME 08	1200 m	2400 m
VOR 08	1200 m	2400 m
RNAV 08	1200 m	2400 m
~~**NDB 08**~~	~~1200 m~~	~~2800 m~~
VOR/DME 26	1600 m	2400 m
VOR 26	1600 m	2400 m
RNAV 26	1600 m	2000 m
NDB 27	1600 m	2400 m
RNAV 27	1600 m	2400 m
RNAV 09	1600 m	2400 m

4.17 MWCR Terminal Procedures

4.17.1 Routing

The VOR/DME approaches are by default the active ones at all times for both MWCR runways. Additionally, the corresponding STARs (GORAN3, GUBEL3) are always considered active. Thus, most flight plans into MWCR will include these STARs. However, if VMC conditions exist at MWCR and are not marginal or fluctuating, the APP controller should endeavor to route arrivals straight to the airport (direct GCM) for the visual approach if traffic separation permits it. If the aircraft reaches GCM and still does not have the field in sight, it can simply and easily begin the VOR/DME Approach for either Runway from GCM (the IAF). If aircraft is the second (following) aircraft in a longitudinal conflict with another arrival however, they should be kept on these STARs for the VOR/DME Approach. This is to ensure that that extra time separation is created while the second aircraft is on the DME arc, and also so that the aircraft can hold at GORAN or GUBEL for arrival sequencing if necessary.

4.17.2 Reports

Regardless of how a MWCR arrival is routed for arrival, it should be instructed to make reports when reaching 30 DME GCM and 15 DME GCM. 15 DME is especially critical because it's the point of divergence for an aircraft joining a STAR (15 DME ARC) and an aircraft continuing directly to GCM. These report times should be recorded in the radar client as formatted in *Table 4M/4N*.

4.18 MWCB Terminal Procedures

4.18.1 Routing

The RNAV approach and NDB approaches are by default the active ones for MWCB's Runway 27 and 09, respectively. However, if VMC conditions exist at MWCB and are not marginal or fluctuating, the APP controller should endeavor to route arrivals straight to the airport (direct CBC) for the visual approach if traffic separation permits it. If the aircraft reaches CBC and still does not have the field in sight, it can be cleared to begin the NDB 27 Approach from CBC or be cleared to an RNAV 09 IAF and cleared for an instrument approach.

4.18.2 Reports

For international arrivals to MWCB, there is no DME distance to report and arrivals are generally in the TMA for very little time before landing. Thus, after initial contact a MWCB arrival with no traffic conflicts might not have to contact APP again until reaching the actual airport/approach.

4.19 Handling of IFR Arrivals

4.19.1 Standard Services

An arriving aircraft that has entered your APP airspace from area (CTR) control, another approach control unit, shall be provided with information and services as follows:

a) type of approach and runway-in-use
b) meteorological information (if not already received) and updates
c) clearance to holding/approach fix
d) descent clearance
e) separation and sequencing as required
f) instrument or visual approach clearance
g) any other information pertinent to safety
h) transfer of communication and control to aerodrome TWR

4.19.2 Initial Contact

A contact-me message may be sent to uncontrolled aircraft approaching the TMA boundary as soon as they are within 20 miles of that boundary and still within the Radar area. If position and altitude details are not furnished by the aircraft on first call, Procedural APP should transmit the following:

a) Aircraft callsign
b) ATC unit callsign
c) Request for location information in the form of:
    a) distance from valid TMA boundary point
    b) DME/Radial GCM or distance/track from CBC
d) Request for Flight Level/Altitude information

Example: Initial Contact, TMA Boundary FIX/TCP

PVO3690:	CAYMAN APPROACH, Private Orange 3690 is checking in.
MWCR_APP:	PRIVATE ORANGE 3690, Cayman Approach, good day. Report your present distance from ATUVI and your present Level.
PVO3690:	3690 is presently 15 miles north of ATUVI, level at 240.

Example: Initial Contact, Direct GCM

GAJ512:	CAYMAN APPROACH, Gama Jet 512 to the north of your airspace, direct GCM.
MWCR_APP:	GAMA JET 512, Cayman Approach, report present DME and radial-tracking GCM and present level.
GAJ512:	Gama Jet 512 is 60 DME GCM tracking inbound radial 010, descending through FL190 for 11,000.

4.19.3 Secondary Dialogue

Once an arriving aircraft has provided Procedural APP with the altitude and position information required, or if an aircraft provides such information on initial call, the controller may initiate the secondary dialogue by transmitting the following:

4. Current QNH and active ATIS information
5. Arrival Routing and Descent Instructions
6. Next Distance/DME report

For an apparently inexperienced or overworked pilot, this verbal transmission can be split in two by waiting until the aircraft has acknowledged the QNH, arrival routing and descent instructions before the next position report.

Example: Secondary or Post-Initiative Dialogue with Arrivals (1)

N386AS - IFR		**E55P/G**
CITYPAIR	**CFL**	**Filed Route**
KMKC - MWCR	410	RACER5 SGF LIT HARES HRV L333 PISAD UL333 DANUL UR640 GCM

N386AS:	CAYMAN APPROACH, Phenom 386AS is just past NAPRA, next waypoint MAMBI, descending through FL240 for 10,000.
MWCR_APP:	N386AS, Cayman Approach, good evening. Descend and maintain 1,500. After MAMBI proceed direct GCM. QNH is 1014, Owen Roberts information bravo is current.
N386AS:	1014, down to 1,500, after MAMBI direct GCM, 6AS.
MWCR_APP:	N386AS, next report 30 DME GCM.

Example: Secondary or Post-Initiative Dialogue with Arrivals (2)

JBU765 - IFR		**A320/L**
CITYPAIR	**CFL**	**Filed Route**
KJFK - MWCR	360	WAVEY EMJAY J174 SWL WETRO ILM AR17 VKZ MTH G448 TADPO UG448 ATUVI GORAN3

JBU765:	CAYMAN APPROACH, JetBlue 765 is descending through 17,000 for 11,000. Currently 15 miles north of ATUVI.
MWCR_APP:	JETBLUE 765, Cayman Approach, good day. QNH 1014, Owen Roberts ATIS information alpha is current, VOR/DME Approach Runway 08. Descend and maintain 1,500. After ATUVI proceed direct GCM. Next report 30 DME.
JBU765:	Cleared down to 1,500, after ATUVI direct Grand Cayman, will report 30 out, 765.

Example: Secondary or Post-Initiative Dialogue with Arrivals (MWCB)

N16WC - IFR		**PA31/G**
CITYPAIR	**CFL**	**Filed Route**
KEYW - MWCB	A110	ROOTE VRGAS G448 UCL A511 LESOM

N16WC: CAYMAN APPROACH, N16WC is level at 9,000, 10 miles from LESOM.

MWCR_APP: N16WC, Cayman Approach, good day. QNH is 1013. Descend and maintain 1,500. After LESOM proceed direct CBC NDB.

N16WC: Copy QNH, descending to 1,500 and direct CBC.

Example: Secondary or Post-Initiative Dialogue with Arrivals (STAR)

WJA2790 - IFR		**B737/L**
CITYPAIR	**CFL**	**Filed Route**
CYYZ - MWCR	360	AIRRA Q103 RICCS Q103 PSK CAE J51 SAV TAY PIE KARTR MTH TADPO UG448 ATUVI GORAN3

WJA2790: CAYMAN APPROACH, WestJet 2790 has left FL360 for lower, 20 miles north of ATUVI, information charlie.

MWCR_APP: WESTJET 2790, Cayman Approach, good day. Cleared GORAN3 arrival, VOR/DME approach Runway 08 as published. Descend to minimum published altitudes, report 30 DME GCM.

WJA2790: 2790 is cleared GORAN3 and VOR/DME 08 as published, descending to 1,500, will call 30 DME.

4.19.4 Clearance for Visual Approach

An aircraft bound directly to GCM or CBC in VMC conditions should be told to report the arrival field in sight for the visual approach. This instruction should be when 15 DME GCM (MWCR) is reported or when the aircraft is inbound CBC (MWCB).

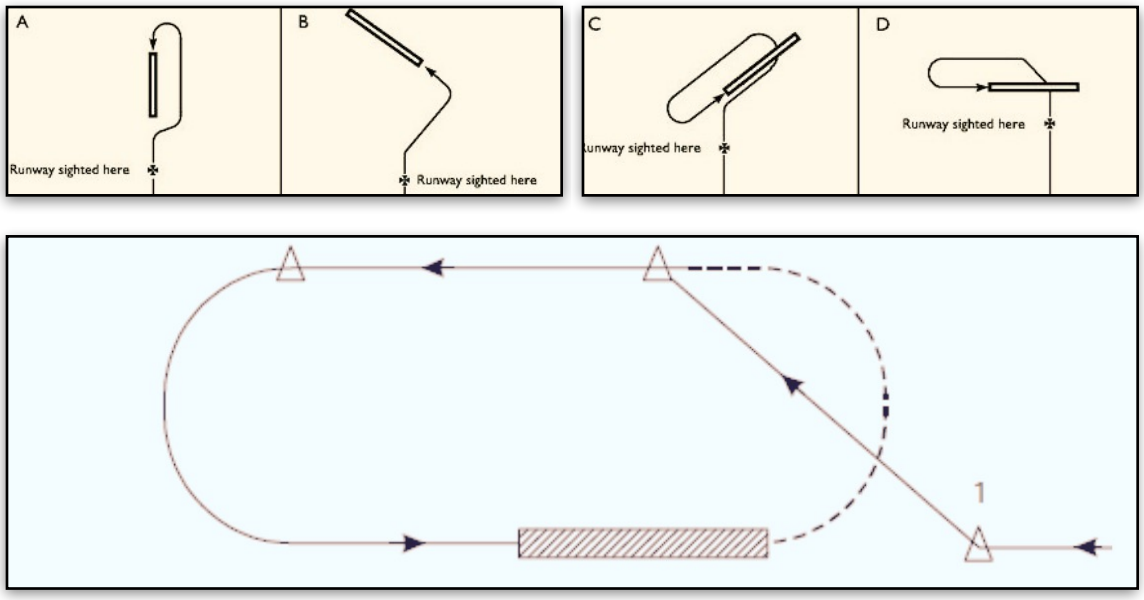
Visual Approach Phraseology

"<CALLSIGN>, roger. Next report the field in sight or the <GCM VOR/ CBC NDB>, whichever comes first."
"<CALLSIGN>, roger, cleared visual approach runway <XX>. Join and report <LEFT/RIGHT> <CIRCUIT ENTRY LEG>."

4.19.5 Visual Approach & Circling Maneuvers

As touched upon previously, aircraft performing a visual approach of a circling approach should be prescribed a particular entry to their arrival runway's traffic circuit based on their relative position when they sight the runway. The guidelines for circling to land are detailed visually in *Figure 4A2*. While Aerodrome Tower and Procedural Approach are both empowered to give an aircraft circuit entry instructions, the Approach controller should always issue the entry before transferring the aircraft to Tower control, if the situation permits. While either controller can issue the circuit entry instruction, only Tower is empowered to sequence traffic within the ATZ. If an arriving aircraft is using the visual or circling approach, Approach should issue the approach clearance and circuit entry instructions, as well as a transfer to Tower, immediately after the pilot reports the runway in sight. Doing so gives Tower as much time as possible to reconcile and arrange the aerodrome landing sequence.

Figure 4A2: Visual & Circling Approach Maneuvers



Example: Direct to GCM for Visual Approach

JBU765 - IFR		**A320/L**
CITYPAIR	**CFL**	**Filed Route**
KJFK - MWCR	360	EMJAY J174 SWL CEBEE WETRO ILM AR17 VKZ MTH G448 TADPO UG448 ATUVI GORAN3

JBU765: CAYMAN APPROACH, JetBlue 765 is descending through 17,000 for 11,000. Currently 15 miles north of ATUVI.

MWCR_APP: JETBLUE 765, Cayman Approach, good day. a QNH 1014, Owen Roberts ATIS information alpha is current, VOR/DME Approach Runway 08. Descend and maintain 1,500. After ATUVI proceed direct GCM. Next report 30 DME.

JBU765: Cleared down to 1,500, after ATUVI direct Grand Cayman, will report 30 out, 765.

JBU765: 30 DME GCM, JetBlue 765.

MWCR_APP: JETBLUE 765, roger, next report 15 DME GCM.

JBU765: Now 15 DME, JETBLUE 765.

MWCR_APP: JETBLUE 765, roger, next report the field in sight or the GCM VOR, whichever comes first.

JBU765: The field or the VOR, whichever comes first, JetBlue 765.

JBU765: JetBlue 765 has the airport in sight at our 12 o'clock.

MWCR_APP: JETBLUE 765, cleared Visual Approach Runway 08. Join and report left downwind.

JBU765: Cleared visual 08, we'll call left downwind, 765.

JBU765: JetBlue 765 is on the left downwind 08.

MWCR_APP: JETBLUE 765, contact Tower on 118.0. Good day.

Example: Direct to CBC for Visual Approach

N16WC - IFR		**PA31/G**
CITYPAIR	**CFL**	**Filed Route**
KEYW - MWCB	A110	ROOTE VRGAS G448 UCL A511 LESOM

N16WC:	CAYMAN APPROACH, N16WC is level at 9,000, 10 miles from LESOM.
MWCR_APP:	N16WC, Cayman Approach, good day. QNH is 1013. RNAV approach runway 09. Descend and maintain 1,500.
N16WC:	Copy QNH, descending to 1,500 and direct CBC.
MWCR_APP:	N16WC, next report the field in sight or the CBC NDB, whichever comes first.
N16WC:	CBC or the field, 6WC.

N16WC:	Field in sight, N216WC.
MWCR_APP:	PIPER 6WC, cleared Visual Approach Runway 09, joint and report left base.
N16WC:	Cleared visual 09, we'll call on base, 6WC.

N16WC:	N16WC is on a dog-leg left base runway 09.
MWCR_APP:	N16WC, contact Brac Tower on 118.4. Good day.

Example: RNAV Visual Approach (SOUTHSIDE/NORTHSIDE)

N973YM - IFR		**M20T/L**
CITYPAIR	**CFL**	**Filed Route**
MWCB - MWCR	**A080**	CBC R644 GCM

N973YM:	CAYMAN APPROACH, N973YM check position TEXAM. Requesting the north side visual approach runway 08.
MWCR_APP:	N973YM, descend and maintain 1,500. Cleared north side visual approach as published. Report left downwind runway 08.
N973YM:	Down to 1,500, cleared north side visual 08, call left downwind, 3YM.

N973YM:	Left downwind runway 08, Mooney 3YM.
MWCR_APP:	MOONEY 3YM, contact Tower on 118.0. Good day.

4.19.5 Clearance for VOR/DME Approach from IAF

The IAF for both VOR/DME approaches at MWCR is GCM. An aircraft starting the approach from GCM flies outbound to the FAF and performs a procedure turn. Clearance for such an approach is given in the following form:

a) Clearance to IAF (VOR/DME station)
b) Descent to Approach Altitude
c) The phrase "*CLEARED VOR/DME Approach runway...*"
d) Request for procedure-turn inbound report

Published VOR/DME Approach Phraseology

"<CALLSIGN>, cleared <APPROACH TYPE> runway <XX> as published. <FURTHER DESCENT IF NECESSARY>, report procedure-turn inbound."

Example: Direct to GCM for VOR/DME Approach

N712BS - IFR		**H25B/G**
CITYPAIR	**CFL**	**Filed Route**
KAPA - MWCR	410	HRV L333 RAKAR UL333 DANUL UR640 MAMBI

N712BS:	CAYMAN APPROACH, Hawker 712BS is 15 miles west of MAMBI, information delta onboard.
MWCR_APP:	N712BS, Cayman Approach, good day. Descend and maintain 1,500. After MAMBI proceed direct GCM. Report 30 DME GCM.
N712BS:	Down to 1-5, GCM after MAMBI, we'll call 30 DME, 2BS.
N712BS:	30 DME GCM, Hawker 2BS.
MWCR_APP:	HAWKER 712BS, roger, next report 15 DME GCM.
N712BS:	Now 15 DME, 712BS.
MWCR_APP:	N712BS roger, next report the field in sight or the GCM VOR, whichever comes first.
N712BS:	The field or the VOR, whichever comes first, N712BS.
N712BS:	Overhead GCM, N712BS.
MWCR_APP:	N712BS, cleared VOR/DME approach runway 08 as published. Report procedure-turn inbound.
N712BS:	Cleared VOR/DME 08, we'll call procedure inbound, 2BS.
N712BS:	N712BS turning inbound on the procedure turn, 08.
MWCR_APP:	N712BS, contact Tower on 118.0, goodnight.

4.19.6 Clearance for VOR/DME Approach from STAR

There are two STARs in use in the Cayman Islands. They correspond to the straight-in VOR/DME approaches for each runway at MWCR: GORAN3 for 08, GUBEL3 for 26. These arrivals involve a 15 DME ARC ending at the straight-in FIX for their approach. When traffic allows, you may clear an arrival for the STAR as well as the corresponding approach at once:

STAR-to-IAP Phraseology

"<CALLSIGN>, cleared <STAR>, <ACCOMPANYING APPROACH) runway <XX> as published. <FURTHER DESCENT IF NECESSARY>, report <NEXT REPORTING POINT>."

Example: STAR to GUBEL for VOR/DME Approach

CAY103 - IFR		**B738/L**
CITYPAIR	**CFL**	**Filed Route**
KMIA - MWCR	340	MTH G448 TADPO UG448 ATUVI GUBEL3

CAY103:	CAYMAN APPROACH, Cayman 103 20 north of ATUVI with information Quebec, through 15,000 for 11,000.
MWCR_APP:	CAYMAN 103, Cayman Approach, good evening. Cleared for the GUBEL3 arrival, VOR/DME Approach runway 26, as published. Descend to minimum published altitudes and report 30 DME GCM.
CAY103:	Cleared GUBEL3, VOR/DME 26 as published. Descending to minimum altitudes and reporting 30 DME, 103.
CAY103:	30 DME GCM, Cayman 103.
MWCR_APP:	CAYMAN 103, roger, next report 15 DME GCM.
CAY103:	Will call 15 DME GCM, Cayman 103.
CAY103:	Now 15 DME, 103.
MWCR_APP:	CAYMAN 103, roger, report GUBEL inbound.
CAY103:	Will call GUBEL inbound, Cayman 103.
CAY103:	GUBEL inbound, Cayman 103.
MWCR_APP:	CAYMAN 103, roger, contact Tower on 118.0, good day.
CAY103:	118.0 for Cayman 103.

Note: The phrase "*descend to minimum published altitudes*" is seen frequently in these examples in conjunction with full-procedure approaches. This addendum is only necessary when you are clearing the aircraft for an approach but have not cleared the aircraft as low as the altitude where the approach's vertical profile begins (see above example).

Note: Alternatively, you can clear them for the STAR and reserve the approach clearance or full descent clearance for a later time when arrival sequencing is more clear:

Example: STAR to GORAN for VOR/DME Approach

DAL690 - IFR		**MD88/L**
CITYPAIR	**CFL**	**Filed Route**
KATL - MWCR	310	BANNG2 LUCKK HEVVN J43 PIE MTH G448 TADPO UG448 ATUVI GORAN3

DAL690	CAYMAN APPROACH, Delta 690 is 18 north of ATUVI with information Quebec, through 17,000 for 11,000.
MWCR_APP:	DELTA 690, Cayman Approach, good evening. Cleared for the GORAN3 arrival as published. Descend to 3,000.
DAL690:	Cleared GORAN3 as published, down to 3,000, Delta 690.
MWCR_APP:	DELTA 690, report 30 DME GCM.
DAL690:	Call you 30 DME, 690.

DAL690:	30 DME GCM, Delta 690.
MWCR_APP:	DELTA 690, roger, conflicting same-direction traffic is an Airbus A319 inbound Owen Roberts, estimating GCM 0350Z. Report 15 DME.

DAL690:	Now 15 DME, Delta 690.
MWCR_APP:	Delta 690, roger, cleared VOR/DME approach runway 08. Descend to minimum published altitudes and report GORAN inbound.
DAL690:	Roger, cleared VOR/DME runway 08, descending to published altitudes, we'll call GORAN, Delta 690.

DAL690:	GORAN inbound, Delta 690.
MWCR_APP:	DELTA 690, roger, contact Tower on 118.0, good day.
DAL690:	118.0, Delta 690. Good day.

4.19.7 Clearance for NDB or VOR Approach

The NDB approach in the Cayman Islands can only be flown starting from the NDB itself (CBC) and on to a procedure turn. Clearance for such an approach is given in the following form:

a) Clearance to IAF, if necessary
b) Descent to Approach Altitude
c) The phrase "*CLEARED VOR/NDB APPROACH RUNWAY...*"
d) Request for procedure-turn inbound report

NDB or VOR Approach Phraseology

"<CALLSIGN>, cleared <NDB/VOR> approach runway <XX> as published. <FURTHER DESCENT IF NECESSARY>, report procedure-turn inbound."

Example: Direct to CBC for NDB Approach

N16WC - IFR		**PA31/G**
CITYPAIR	**CFL**	**Filed Route**
KEYW - MWCB	A110	ROOTE VRGAS G448 UCL A511 LESOM

N16WC:	CAYMAN APPROACH, N16WC is level at 9,000, 10 miles from LESOM.
MWCR_APP:	N16WC, Cayman Approach, good day. QNH is 1013. NDB approach runway 27. Descend and maintain 1,500. After LESOM proceed direct CBC NDB.
N16WC:	Copy QNH, descending to 1,500 and direct CBC.
MWCR_APP:	N16WC, next report the field in sight or the CBC NDB, whichever comes first.
N16WC:	CBC or the field, 6WC.
N16WC:	CBC overhead, 6WC.
MWCR_APP:	PIPER 6WC, cleared NDB approach runway 27 as published. Descend to minimum published altitudes and report procedure-turn inbound.
N16WC:	Cleared NDB 27, we'll call inbound, 6W.
N16WC:	N16WC is procedure turn inbound, 27.
MWCR_APP:	N16WC, contact Brac Tower on 118.4, good day.

4.19.8 Clearance for RNAV/GNSS Approach

Note: RNAV approaches are versatile and accurate.Clearance for such an approach is given in the following form:

a) Clearance to the IF or IAF

b) Descent to Approach Intercept Altitude

c) The phrase "*CLEARED RNAV APPROACH RUNWAY...*"

d) Request for IAF-inbound report

RNAV Approach Phraseology

"<CALLSIGN>, from present position proceed direct <IAF>. Cleared RNAV approach runway <XX>. <FURTHER DESCENT IF NECESSARY>, report <IAF> inbound."

Note: RNAV approaches present an ATC challenge in the procedural environment because flying one so often involves abandoning the ATS route and procedure structure and proceeding DIRECT to an approach FIX. This is why it's often advisable to keep an aircraft on their arrival route until a DME position report (30 usually) before sending them to direct to the approach FIX.

Example: RNAV Approach Clearance (MWCR)

AAL1007:	CAYMAN APPROACH, American 1007 is 15 to the north of ATUVI, descending through 15,000 for 11, information lima.
MWCR_APP:	AMERICAN 1007, Cayman Approach, good day. Descend to 1,500, report 30 DME GCM.
AAL1007:	Roger, down to 1,500, and American 1007 has a request.
MWCR_APP:	AMERICAN 1007, go ahead request.
AAL1007:	Roger, American 1007 is requesting the RNAV approach today, newly certified equipment.
MWCR_APP:	AMERICAN 1007, request acknowledged. Continue on present course to GCM and expect RNAV clearance later on. Report 30 DME GCM.
AAL1007:	Roger, thanks. We'll call 30 DME, American 1007.
AAL1007:	30 DME GCM, 1007.
MWCR_APP:	AMERICAN 1007, from present position proceed ALONA. Cleared RNAV approach runway 08, as published. Descend to minimum published altitudes and report MOBIX inbound.
AAL1007:	MOBIX inbound, American 1007.
MWCR_APP:	AMERICAN 1007, contact Tower on 118.0, good day.

Example: RNAV Approach Clearance (MWCB)

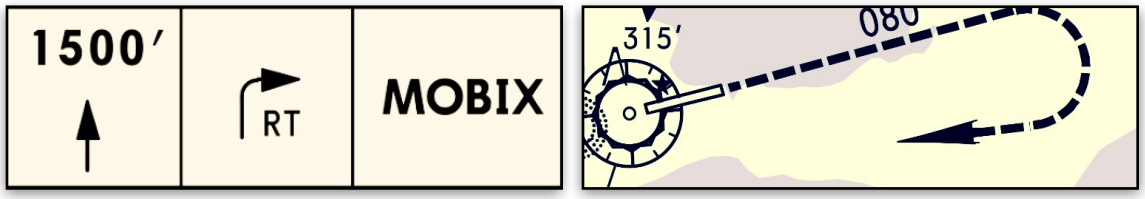
N95VS:	CAYMAN APPROACH, Learjet 5VS is 15 miles from BETAR, descending through 17,000 for 11,000.
MWCR_APP:	N95VS, Cayman Approach, good day. QNH 1014. IMC conditions currently at Kirkconnell, runway 09 in use. After BETAR proceed direct ADROS. Cleared RNAV approach runway 09 as published. Descend to minimum published altitudes and report TALES inbound.
N95VS:	Copy the weather, direct ADROS after BETAR and cleared RNAV 09 approach. We'll call TALES inbound.

4.19.9 Aircraft on the Missed Approach

IFR Arrivals who fly a missed approach fall into 2 categories:

a) Visual Approach arrivals, which will generally be instructed by Aerodrome TWR to re-enter the visual circuit and remain on TWR frequency
b) Instrument Approach arrivals, which will be told to "fly the published Missed approach" and handed from TWR back to APP

Figure 4A3: Anatomy of a Missed Approach



MISSED APCH: Climb STRAIGHT AHEAD to 1500', turn RIGHT to GORAN and hold.

An aircraft that is handed back from Aerodrome TWR to Procedural APP control should be re-cleared for the full procedure instrument approach:

Example: Published Missed Approach to Published Approach

EJA793:	CAYMAN APPROACH, ExecJet 793 is airborne on the missed approach VOR/DME 08.
MWCR_APP:	EXECJET 793, Cayman Approach. Cleared VOR/DME approach runway 08, as published. Report GORAN inbound.

4.19.10 Circle-to-Land Operations

An aircraft may fly an instrument approach to one end of a runway and then maneuver visually to land on the other end. This is called "circling-to-land".

Circle-to-Land Phraseology

"<CALLSIGN>, cleared <APPROACH> runway <XX>, circle to runway <XX>. Report the field in sight."

Example: Instrument Approach & Circle-To-Land

CAY4003 - IFR		**SF34/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCB	A070	TEXAM2 R644 CBC

CAY4003:	Cayman 4003 is passing position TEXAM.
MWCR_APP:	CAYMAN 4003, roger, when ready descend at pilots discretion to 1,500. Report leaving 7,000. NDB 27, circle to land runway 09 in use at the Brac. QNH 1016.
CAY4003:	1016, we'll leave 7,000 right now for 1.5, Cayman 4003.
MWCR_APP:	CAYMAN 4003, roger, next report the field in sight or the CBC NDB, whichever comes first.
CAY4003:	CAYMAN APPROACH, Cayman 4003 is overhead CBC.
MWCR_APP:	CAYMAN 4003, cleared NDB approach runway 27, circle to runway 09. Report procedure-turn inbound.
CAY4003:	Cleared NDB 27 circling to land 09, will call inbound 4003.
CAY4003:	Procedure turn inbound, Cayman 4003.
MWCR_APP:	CAYMAN 4003, roger, report the runway in sight.
CAY4003:	Cayman 4003 has runway in sight, joining the right downwind, 09.
MWCR_APP:	CAYMAN 4003, contact Brac Tower on 118.4.
CAY4003:	118.4 for Cayman 4003.

4.20 Holding Patterns & Arrival Sequencing

4.20.1 Holding

The TMA's published terminal holds are all at Approach FIXes. Their purpose is generally to allow for sequencing of arrivals as described in 4.21.2. However, holds can be flown by an aircraft for any reason and at any location at the discretion of the APP controller. Mechanical issues, needing more time to configure for approach and landing, or instrument practice are all valid and normal reasons to enter a hold. The following components are required in a holding instruction or clearance:

a) Name of published hold or instructions for unpublished hold (see below)
b) Assigned altitude for hold
c) Expected Approach Time (EAT) if aircraft is being stacked for traffic

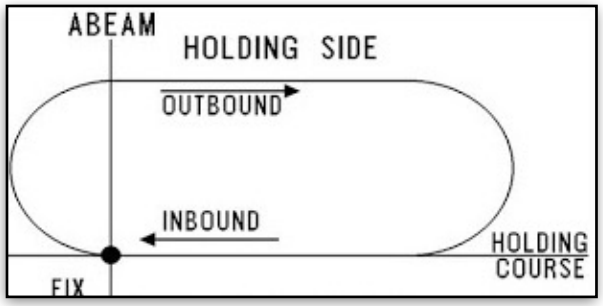
Published Holding Phraseology

"<CALLSIGN>, enter published hold at <FIX>. Maintain <ALTITUDE>. Expect approach at <EXPECTED APPROACH TIME>."

Example: Published Hold (GORAN)

MWCR_APP:	CAYMAN 2107, enter the published hold at GORAN. Maintain 3,000. Expect approach at 2154Z.
CAY2107:	Entering hold at GORAN, stopping at 3,000, EAT 2154, Cayman 2107.

Figure 4A4: Anatomy of a Holding Pattern



If a holding pilot is unfamiliar with a charted hold or is holding at a FIX without a published hold, the following must be supplied to the pilot:

a) Inbound track/radial/bearing
b) Direction of holding turn
c) Distance/Duration of the outbound leg

Unpublished Holding Phraseology

"<CALLSIGN>, enter hold at <FIX>. Inbound course <COURSE>, <LEFT/RIGHT> hand turns, <DISTANCE> outbound leg."

Example: Unpublished Hold (TEXAM)

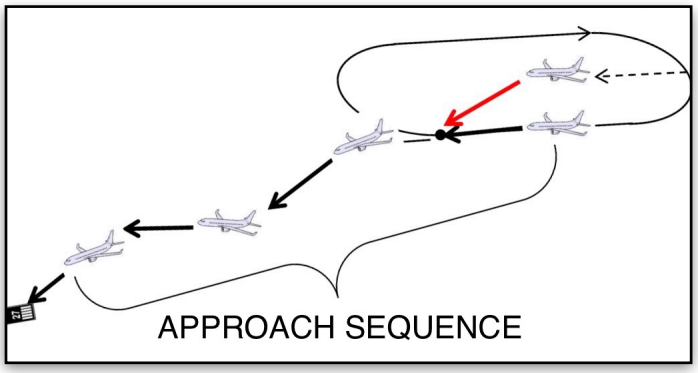
MWCR_APP:	CAYMAN 4422, ready to copy holding instructions?
CAY4422:	Ready to copy, Cayman 4422.
MWCR_APP:	CAYMAN 4422, enter hold at TEXAM: inbouynd course 080 degrees, right hand turns, 4 miles outbound leg.

4.20.2 Arrival Sequencing

Holding Pattern "stacking" is the only genuine method of sequencing arrivals for a Procedural APP controller. Holding sequencing is necessary in the following scenarios:

a) consecutive arrivals to the airport are unable to be separated longitudinally during their descents and must be sequenced at the approach FIX (GORAN, GUBEL, etc.)
b) hard IMC conditions exist in which the straight-in Instrument Approach (VOR/DME, RNAV) is compulsory for arrivals

Figure 4A5: Procedural "Approach Sequence"



In scenarios of hard IMC or traffic congestion, Procedural APP control should "stack" these aircraft at the holds for the active Instrument Approach as described in Section 4.20.3, letting one aircraft at a time land safely.

The following procedure shall be employed in the Procedural APP environment whenever approaches are in progress:

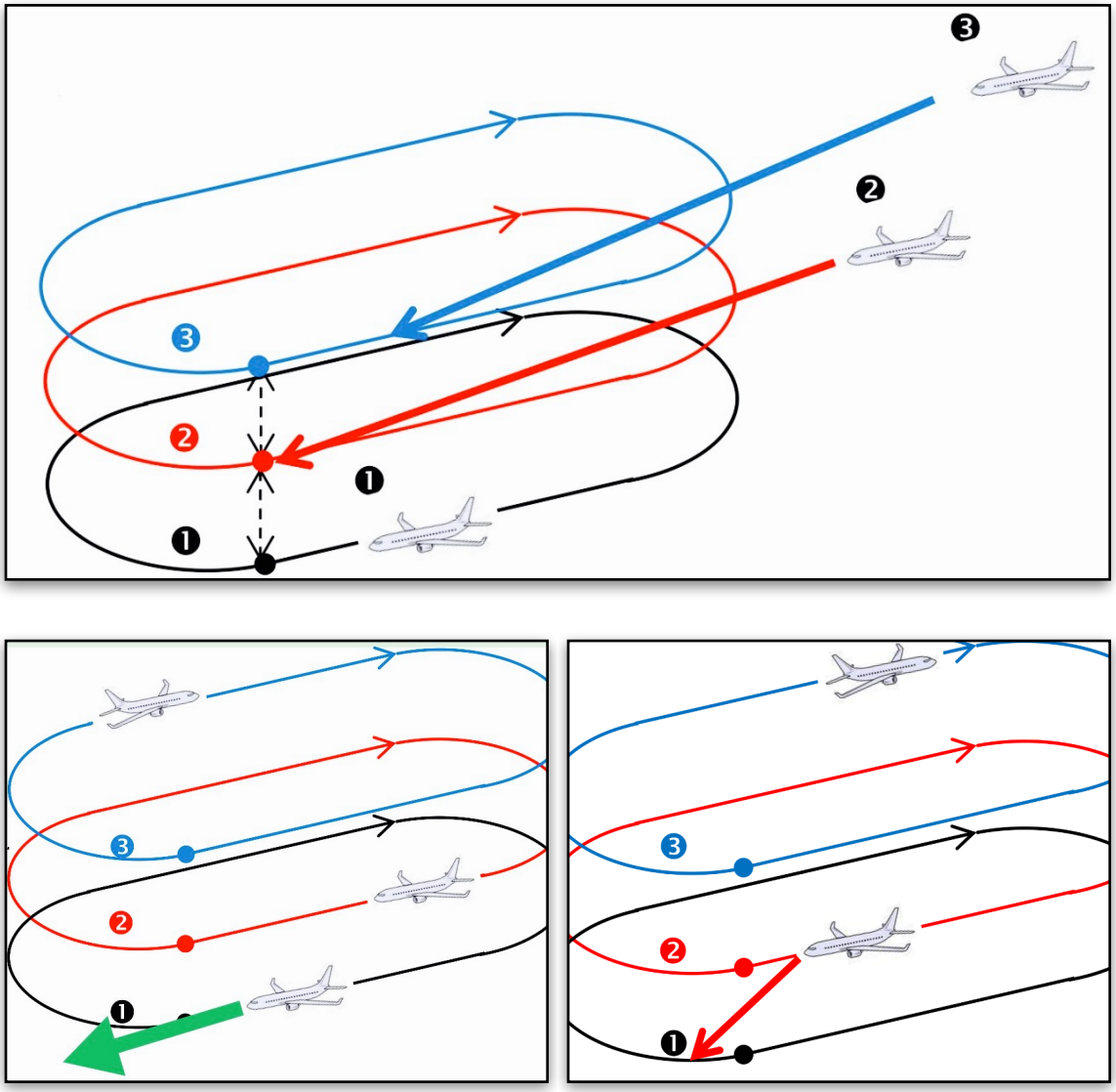
a) the approach sequence shall be established in a manner, which will facilitate arrival of the maximum number of aircraft with the least delay.
b) the first aircraft will descend from the lowest level of the holding stack and commence approach when instructed
c) the succeeding aircraft in the approach sequence may be instructed to descend to the level previously occupied by the first aircraft, after the first aircraft has reported vacating it. If, however, severe turbulence is known to exist, the instruction shall be withheld until the first aircraft has reported at least 1,000 ft. below the vacated level
d) the succeeding aircraft may be cleared for approach when:
    i. the preceding aircraft has landed (IMC); or
    ii. the preceding aircraft has reported that it is able to complete its approach without encountering IMC or has cancelled IFR; or
    iii. the preceding aircraft is in communication with and sighted by aerodrome control, and reasonable assurance exists that a normal landing can be accomplished

Note: When giving the EAT (Expected Approach Time) to an aircraft entering the approach stack, take the EuroScope–generated ETA (Arrival Time) of the preceding aircraft and add 5 minutes. For example, if Airplane #1 shows an ETA at MWCR of 2123Z, aircraft #2 should receive an EAT of 2128Z.

4.20.3 "Stack" Management

A holding stack is a system which uses an approach IAF with a published holding pattern to act as a waiting-gate for multiple arrivals who are unseparated longitudinally. This is a *FIFO* system. FIFO means FIRST-IN FIRST-OUT. This means that the Procedural APP controller puts the aircraft in the stack by order of arrival, in order to remove them using the same order. In this order the controller shall stack the aircraft using the lowest altitude available above the preceding aircraft in the stack. This process is illustrated by *Figure 4A6*.

Figure 4A6: Anatomy of an Approach Stack



An aircraft is removed from the stack once cleared for the approach. Any such instruction for departing the stack should be transmitted while the aircraft is on the inbound leg of the holding pattern. Once an aircraft is thus removed from the stack, the aircraft previously stacked above the lowest rung should be progressively descended to the next lowest rung to use the room which has been made.

Example: GORAN Approach Hold Sequencing (IMC Weather)

CAY103 - IFR		**B738/L**
CITYPAIR	**CFL**	**Filed Route**
KMIA - MWCR	340	MTH G448 TADPO UG448 ATUVI GORAN3

JBU765 - IFR		**A320/L**
CITYPAIR	**CFL**	**Filed Route**
KJFK - MWCR	360	VKZ MTH G448 TADPO UG448 ATUVI GORAN3

CAY103:	CAYMAN APPROACH, Cayman 103 is 15 miles north of ATUVI through FL200 for 11,000, information bravo.
MWCR_APP:	CAYMAN 103, Cayman Approach, good evening. Cleared for the GORAN3 arrival as published. Descend to 3,000, report 30 DME GCM.
JBU765:	CAYMAN APPROACH, JetBlue 765 is 25 miles north of ATUVI, through 18,000 for 11,000 with bravo.
MWCR_APP:	JETBLUE 765, Cayman Approach, good day. Cleared GORAN3 arrival as published. Descend to 4,000 and report 30 DME GCM.
CAY103:	30 DME, Cayman 103.
MWCR_APP:	CAYMAN 103, descend to 1,500. Report 15 DME GCM.
CAY103:	Down to 1.5, call 15 DME, 103.
JBU765:	CAYMAN APPROACH, JetBlue 765 is 30 DME GCM.
MWCR_APP:	JETBLUE 765, roger. Descend to 3,000. Report 15 DME GCM. Conflicting traffic is same-direction, a Boeing 737 descending 1,500. Estimating GORAN at 1921Z.
JBU765:	Down to 3,000, call 15 DME, JetBlue 765.
CAY103:	Check 15 DME, Cayman 103.
MWCR_APP:	CAYMAN 103, roger. Cleared VOR/DME approach runway 08 as published. Report GORAN inbound.
CAY103:	Cleared VOR/DME 08, call you GORAN inbound, 103.
JBU765:	JetBlue 765 is 15 DME GCM.
MWCR_APP:	JETBLUE 765, roger, hold at GORAN as published, maintain 3,000. Expected Approach Time 2235Z.

JBU765:	Hold at GORAN, 2235Z, JetBlue 765.

CAY103:	GORAN inbound, Cayman 103.
MWCR_APP:	CAYMAN 103, contact Tower, 118.0.

MWCR_APP:	JETBLUE 765, cleared VOR/DME approach runway 08. Descend to minimum published altitudes and report inbound.
JBU765:	Cleared VOR/DME 08, call you inbound, 765.

JBU765:	GORAN inbound, JetBlue 765.
MWCR_APP:	JETBLUE 765, contact Tower, 118.0.

Example: CBC Approach Hold Sequencing (IMC Weather)

CAY4007 - IFR		SF34/G
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCB	A070	TEXAM2 R644 CBC

N16WC - IFR		PA31/G
CITYPAIR	**CFL**	**Filed Route**
KEYW - MWCB	A110	ROOTE VRGAS G448 UCL A511 LESOM CBC

CAY4007:	CAYMAN APPROACH, Cayman 4007 is position TEXAM.
MWCR_APP:	CAYMAN 4007, QNH 1015. NDB 27 use. When ready, descend at pilots discretion to 1,500. Report leaving 7,000.
CAY4007:	1015, leaving 7,000 now, 4007.
MWCR_APP:	CAYMAN 4007, roger, cleared NDB approach runway 27 as published. Report overhead CBC.
CAY4007:	Cleared NDB 27 as published, call you CBC, 4007.
N16WC:	CAYMAN APPROACH, N16WC is 5 miles from LESOM, descending through 10,000 for 9,000.
MWCR_APP:	PIPER 6WC, Cayman Approach. Brac QNH 1015, NDB 27 in use. Descend at pilots discretion to 3,000 and hold at CBC as published. Report entering the hold.
N16WC:	3,000 at my discretion, holding at CBC as published. We'll call you on the entry, 6WC.
CAY4007:	Cayman 4007 is overhead CBC on the approach.
MWCR_APP:	CAYMAN 4007, roger, next report procedure turn inbound.
N16WC:	Piper 6WC entering the hold at CBC.
MWCR_APP:	N16WC, roger, expect approach in 10 minutes.
CAY4007:	Cayman 4007 is Procedural turn inbound.
MWCR_APP:	CAYMAN 4007, contact Brac Tower on 118.4.
MWCR_APP:	PIPER 6WC, cleared NDB approach runway 27. Descend to minimum published altitudes and report Procedural turn inbound.
N16WC:	Cleared NDB 27, call you inbound, 6WC.

4.21 Handling of IFR Departures

4.21.1 Standard Services

Approach control shall provide post-departure services to departing IFR flights as follows:

a) Further climb (as appropriate)
b) Separation from other controlled flights
c) Transfer of communications to next ATC unit or UNICOM

Terminal Departure Phraseology

"<CALLSIGN>, Cayman Approach, good day. Next report position <BOUNDARY FIX>."

Example: IFR Departure (MWCR)

DAL917 - IFR		**MD88/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KATL	360	GCM G448 VRGAS G448 MTH LBV J73 SZW DAWWN HRBBY VYPPR1

DAL917:	CAYMAN APPROACH, Delta 917 is Airborne climbing to FL360, making left turn to join the G448.
MWCR_APP:	DELTA 917, Cayman Approach, good day. Next report position ATUVI.
DAL917:	Roger, call you at ATUVI, Delta 917.

DAL917:	Delta 917, check position ATUVI.
MWCR_APP:	DELTA 917, contact Havana on 133.7, good day.

Example: IFR Departure (MWCB)

EJA312 - IFR		**C650/L**
CITYPAIR	**CFL**	**Filed Route**
MWCB - KFLL	280	LESOM A511 UCL G448 MTH DVALL2

EJA312:	CAYMAN APPROACH, ExecJet 312 is airborne out of runway 09, climbing FL280, turning direct LESOM.
MWCR_APP:	EXECJET 312, Cayman Approach, good day. Next report position LESOM.
EJA312:	Roger, call you at LESOM, 312.

EJA312:	ExecJet 312, check position LESOM.
MWCR_APP:	EXECJET 312, contact Havana on 133.7, good day.

Example: IFR Departure (MWCR - Jamaica Bound)

CAY620 - IFR		**B738/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MKJP	270	NALRO2 NALRO UG633 SIA UG442 KEMBO

CAY620: CAYMAN APPROACH, Cayman 620 is Airborne, NALRO2 departure, climbing to FL270.

MWCR_APP: CAYMAN 620, Cayman Approach, good day. Next report position NALRO.

CAY620: Roger, call you at NALRO, Cayman 620.

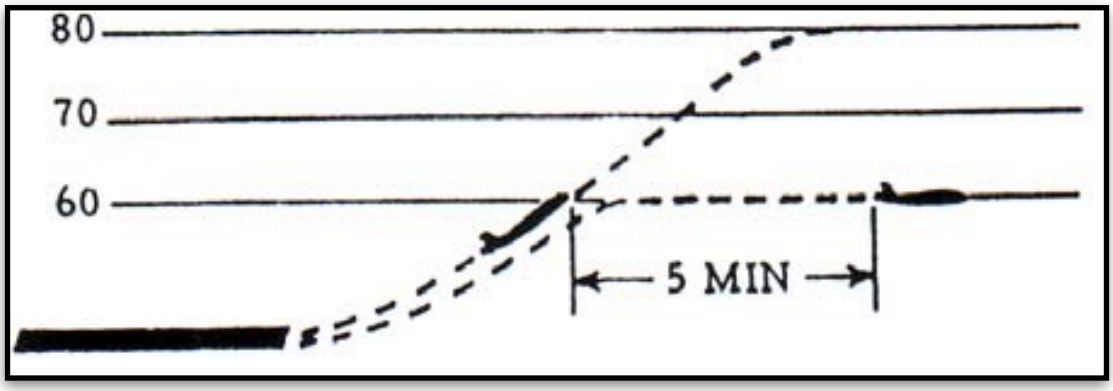
CAY620: Cayman 620, check position NALRO.

MWCR_APP: CAYMAN 620, contact Kingston Radar on 125.4, good day.

4.21.2 Separation Standards

Multiple departing aircraft which plan to fly the same track after takeoff (same route and/or same TMA boundary fix) and will not be vertically separated during the climb must depart at least 5 minutes apart, as shown in *Figure 4A7*.

Figure 4A7: Same-Track Departure Spacing



4.21.2 Assessment of Flight Plan & Coordination

The Procedural Approach controller must use the "clearance valid" request from TWR (as an IFR departure requests taxi) to analyze the flight plan for ways to fit it into a separation plan. If two Aircraft have filed flight plan to depart the TMA via the same boundary FIX, the first aircraft to call for taxi will be cleared without delay. If the succeeding Aircraft calls for taxi less than 5 minutes later, one of two actions must be implemented:

a) the succeeding Aircraft must accept a ground hold delay until 5 minutes have passed since the recorded departure time of the succeeding aircraft
b) the succeeding Aircraft must accept reassignment along an alternate track/route that diverges from his planned track by at least 20 degrees.

☎ *Example: Clearance Valid Request (Conflict)*

MWCR_TWR:	APPROACH, Owen Roberts Tower request clearance valid, CAY601.
MWCR_APP:	TOWER, Approach, clearance not valid. Must accept 5 minute ground delay following departure of VP-CRL.
MWCR_TWR:	Roger, will release 5 minutes after previous departure.

☎ *Example: Clearance Valid Request (Conflict) (2)*

MWCR_TWR:	APPROACH, Owen Roberts Tower request clearance valid, N900SF.
MWCR_APP:	TOWER, Approach, clearance not valid. Recommend G877 RIKEL for separation from conflicting traffic headed for ATUVI, or 5 minute departure delay until 2142Z.
MWCR_TWR:	Roger, will assign RIKEL or release no earlier than 2142Z.

Note: It is up to the Approach controller to extend that initial separation from 5 minutes to 10 minutes once both aircraft are airborne. The easiest way to do this is to approve a high-speed climb-out for the first departure and a slightly tighter speed restriction for the second one.

Example: Creating Longitudinal Separation, Same-Track Departures

N525LJ - IFR		**LJ45/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KFLL	280	GCM G877 KANEX UCL G448 MTH DVALL2

N166RJ - IFR		**BE40/L**
CITYPAIR	**CFL**	**Filed Route**
MWCR - KJAX	320	KANEX2 KANEX UCL G448 MTH DVALL2

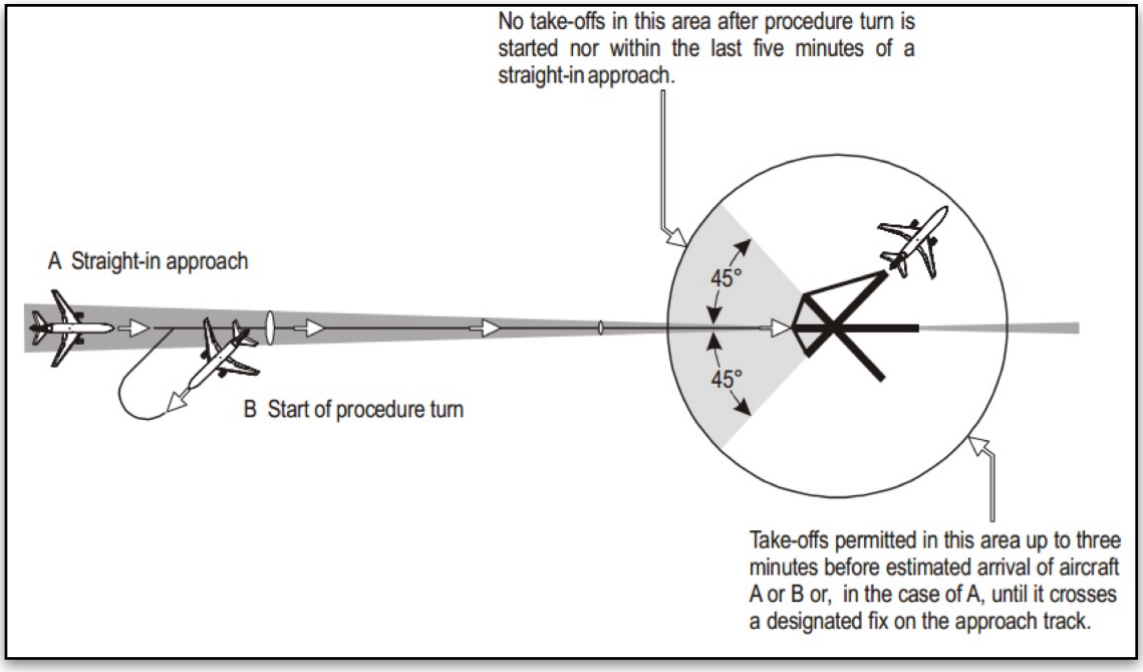
N525LJ:	CAYMAN APPROACH, Lear 525LJ is airborne joining the G877.
MWCR_APP:	N525LJ, Cayman Approach, good day. High speed climb out approved, no speed restrictions below 10,000. Report position RIKEL.
N525LJ:	No speed restrictions, call you at RIKEL, 525LJ.
N166RJ:	CAYMAN APPROACH, N166RJ is airborne from runway 08, RIKEL2 departure.
MWCR_APP:	N166RJ, Cayman Approach, good day. Do not exceed 240 knots airspeed below 10,000. Report position RIKEL.
N166RJ:	240 or less below 10,000, call you at RIKEL, N166RJ.
N525LJ:	Check position RIKEL, N525LJ.
MWCR_APP:	LEAR 5LJ, change to UNICOM 122.8, good day.
N166RJ:	BeechJet 6RJ is overhead RIKEL.
MWCR_APP:	N166RJ, change to UNICOM 122.8, good day.

4.21.3 Separation from Aircraft on Instrument Approach

Departing aircraft are protected from arriving aircraft on the instrument approach by ensuring the following standards, illustrated in *Figure 4AC*:

a) No aircraft may depart the aerodrome on a route which diverges from the Active final approach course by less than 45 degrees once an arrival has begun their procedure turn
b) No aircraft may depart the aerodrome on a route which diverges from the Active final approach course by less than 45 degrees for at least 5 minutes after a straight-in approach has been begun
c) No aircraft may depart the aerodrome on any departure route once an arriving aircraft has reached the FAF

Figure 4A8: Approach and Departure Sequencing



4.22 Handling of IFR Inter-TMA Flights

4.22.1 Routing & General Practices

IFR flights between MWCB and MWCR (in either direction) must be routed via the R644 low ATS route, which stretches between GCM VOR and CBC NDB, connected roughly in the middle by intersection TEXAM.

Example: IFR Inter-TMA Flight (MWCR-MWCB)

CAY4524 - IFR		**DHC6/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - **MWCB**	A070	GCM R644 CBC

CAY4524:	CAYMAN APPROACH, Cayman 4524 is airborne, joining the flight planned route, climbing to 7,000.
MWCR_APP:	CAYMAN 4524, Cayman Approach, good morning. Next report level at 7,000.
CAY4524:	Roger, call you at level at 8,000, 4524.
CAY4524:	Cayman 4524, level at 7,000.
MWCR_APP:	CAYMAN 4524, Roger, next report position TEXAM.
CAY4524:	Cayman 4524, check position TEXAM.
MWCR_APP:	CAYMAN 4524, Roger, when ready descend at your discretion to 1,500. Brac QNH 1013, runway 09 in use. Report leaving 7,000.
CAY4524:	1013, down to 1,500 when ready. Call you leaving 7,000, 4524.
CAY4524:	Cayman 4524 leaving 8,000 for 1.5.
MWCR_APP:	CAYMAN 4524, report the field in sight or the CBC NDB, whichever comes first.
CAY4524:	Cayman 4524 has the Brac in sight.
MWCR_APP:	CAYMAN 4524, cleared visual approach runway 09. Make straight-in and report on final.
CAY4524:	Cleared visual 09, call you on final, 4524.
CAY4524:	Cayman 4524, 10 mile final runway 09.
MWCR_APP:	CAYMAN 4524, contact Brac Tower on 118.4, good day.

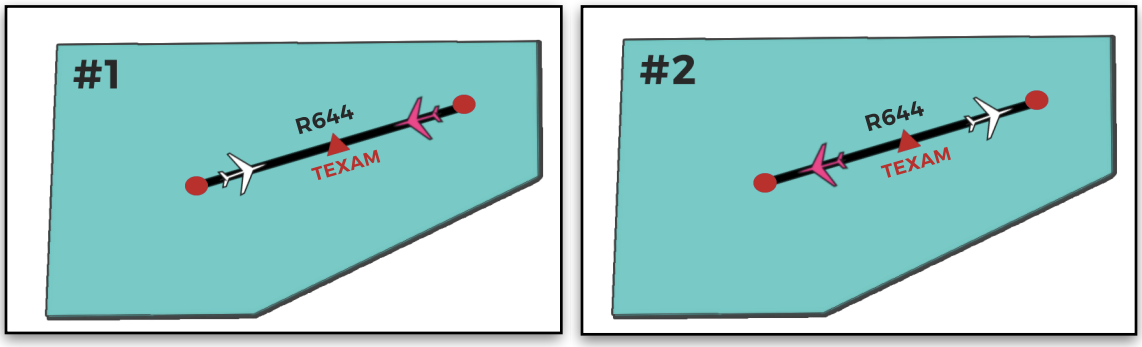
Example: IFR Inter-TMA Flight (MWCB-MWCR)

N100PU - IFR		**E50P/G**
CITYPAIR	**CFL**	**Filed Route**
MWCB - MWCR	A080	R644

N100PU:	CAYMAN APPROACH, Phenom 100PU is airborne, joining the flight planned route, climbing to 8,000.
MWCR_APP:	N100PU, Cayman Approach, good morning. Next report level at 8,000.
N100PU:	Roger, call you at level at 8,000, Phenom 0PU.
N100PU:	N100PU, level at 8,000.
MWCR_APP:	PHENOM 0PU, Roger, next report position TEXAM.
N100PU:	100PU, check position TEXAM.
MWCR_APP:	CAYMAN 4524, Roger, when ready descend at your discretion to 1,500. QNH 1014, Owen Roberts information delta is current, VOR/DME 08 in use. Report leaving 8,000.
N100PU:	1014, down to 1,500 when ready. We'll get delta and call you leaving 8,000, N100PU.
N100PU:	Phenom 100PU leaving 8,000 for 1.5 with information delta.
MWCR_APP:	PHENOM 0PU, report 15 DME GCM.
N100PU:	Phenom 100PU is 15 DME GCM.
MWCR_APP:	PHENOM 0PU, report the field in sight or the GCM VOR, whichever comes first.
N100PU:	Phenom 0PU is overheard the VOR.
MWCR_APP:	N100PU, cleared VOR/DME approach runway 08, as published. Descend to minimum published altitudes and report procedure-turn inbound.
N100PU:	Cleared VOR/DME 08, call you inbound, 0PU.
N100PU:	Phenom 100PU inbound procedure turn.
MWCR_APP:	PHENOM 0PU, contact Tower on 118.0.

4.22.2 Separating Simultaneous Inter-TMA Flights

Figure 4A9: Simultaneous Transitions of R644



Two IFR aircraft flying in opposite directions on the R644 represent a special separation scenario for Procedural APP controllers, one in which **composite Separation** (a combination of the separation types) is used. See 4.15.5 for more on composite separation.

i) If the two aircraft depart their respective airports within 5 minutes of each other, longitudinal separation shall apply (based on their distance in minutes from the point of convergence) until both aircraft have reported level at their assigned cruise altitudes.

ii) At this time, vertical separation (see 4.10.4) takes over. The next step in facilitating the two flights is issuing the descent clearances. However, as soon as the aircraft are cleared to vacate their cruise altitudes, the vertical separation dissolves. Thus, we must wait until the longitudinal conflict is resolved.

iii) That resolution occurs when the two aircraft are confirmed (through a common position report) to have passed each other OR ten minutes after they were estimated to have passed each other (an assumption that's mostly unnecessary in this scenario). If the aircraft departed their respective airports less than 5 minutes apart, the descent clearances can be issued once both airplanes have reported reaching TEXAM. At this time, the longitudinal conflict is gone because the airplanes are now on tracks which diverge by 180 degrees, instead of the opposite, converging tracks.

Note: If the aircraft departed more than 5 minutes apart, they are likely to pass each other closer to one of the two Aerodromes than to TSZAM. In this case, the longitudinal conflict can be discharged by a visual confirmation from one of the two aircraft that the other has passed them, or by visually confirming the passing based on observations within the Tower Control Zone (CTR).

Inter-TMA (R644) Separation Phraseology

"<CALLSIGN>, Cayman Approach, good day. Report level at <CRUISE LEVEL>."
"<CALLSIGN>, roger, next report position TEXAM."

Example: Opposite-Direction IFR Flights on R644

CAY4009 - IFR		**SF34/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCB	A070	TEXAM2 R644 CBC

N285NG - IFR		**PC12/L**
CITYPAIR	**CFL**	**Filed Route**
MWCB - MWCR	A080	CBC R644 GCM

CAY4009:	CAYMAN APPROACH, Cayman 4009 is airborne on the TEXAM2 departure, climbing 7,000.
MWCR_APP:	CAYMAN 4009, Cayman Approach, good evening. Next report level at 7,000.
N285NG:	CAYMAN APPROACH, Pilatus 285NG is airborne out of the Brac, joining the R644 and climbing 8,000.
MWCR_APP:	N285NG, Cayman Approach, good evening. Next report level at 8,000.
CAY4009:	CAYMAN APPROACH, Cayman 4009 is level 7,000.
MWCR_APP:	CAYMAN 4009, roger, next report TEXAM.
N285NG:	CAYMAN APPROACH, N285NG level at 8,000.
MWCR_APP:	N285NG, roger, next report TEXAM.
CAY4009:	Cayman 4009 check position TEXAM.
MWCR_APP:	CAYMAN 4009, roger, non-conflicting traffic is opposite-direction, a Pilatus PC12 level at 8,000, estimating TEXAM 0545Z.
N285NG:	CAYMAN APPROACH, N285NG check position TEXAM.
MWCR_APP:	PILATUS 5NG, roger, when ready descend at your discretion to 1,500. Report 15 DME GCM. Information alpha is current.
N285NG:	Down to 1,500. Will call 15 DME, 5NG.
MWCR_APP:	CAYMAN 4009, when ready descend at your discretion to 1,500. QNH 1015. Report the field in sight or the CBC NDB, whichever comes first.
CAY4009:	To 1.5 at our discretion, will call the field or the NDB, Cayman 4009.

Example: Opposite-Direction IFR Flights on R644 (>5 Min. Difference)

N285NG:	CAYMAN APPROACH, N285NG check position TEXAM.
MWCR_APP:	PILATUS 5NG, roger, when ready descend at your discretion to 4,000. Report 15 DME GCM. Information alpha is current.
N285NG:	Down to 4,000, will call 15 DME, 5NG.

CAY4009:	CAYMAN APPROACH, Cayman 4009 is airborne, climbing 7,000.
MWCR_APP:	CAYMAN 4009, Cayman Approach, good day. Maintain 3,000 for separation.
CAY4009:	3,000 for now, Cayman 4009.
MWCR_APP:	PILATUS 5NG, conflicting traffic is opposite-direction, level at 3,000, a Saab 340 departed Grand Cayman at 0230Z. Report passing that traffic below.

N285NG:	Just passed the traffic at 3,000, 585NG.
MWCR_APP:	PILATUS 5NG, roger, descend to 1,500. Report the field in sight or the GCM VOR, whichever comes first.
N285NG:	Field or the VOR, will call, 5NG.
MWCR_APP:	CAYMAN 4009, climb to and report level at 7,000.
CAY4009:	Report level at 7,000, 4009.

Example: Same-Track IFR Flights on R644

CAY4009 - IFR		**SF34/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCB	A070	TEXAM2 R644 CBC

N973YM - IFR		**M20T/L**
CITYPAIR	**CFL**	**Filed Route**
MWCB - MWCR	A090	CBC R644 GCM

CAY4009:	CAYMAN APPROACH, Cayman 4009 is airborne on the TEXAM2 departure, climbing 7,000.
MWCR_APP:	CAYMAN 4009, Cayman Approach, good evening. Next report level at 7,000.

N973YM:	CAYMAN APPROACH, Mooney 3YM is airborne from 08, joining the R644.

MWCR_APP:	N285NG, Cayman Approach, good evening. Next report level at 9,000.
CAY4009:	CAYMAN APPROACH, Cayman 4009 is level 7,000.
MWCR_APP:	CAYMAN 4009, roger, next report TEXAM.
N973YM:	CAYMAN APPROACH, N285NG level at 9,000.
MWCR_APP:	N285NG, roger, next report TEXAM.
CAY4009:	Cayman 4009 check position TEXAM.
MWCR_APP:	CAYMAN 4009, roger, descend at pilot's discretion to 1,500. Brac QNH 1014.
N973YM:	CAYMAN APPROACH, N973YM check position TEXAM.
MWCR_APP:	CAYMAN 4009, report altitude passing.
CAY4009:	Leaving 5,000, 4009.
MWCR_APP:	N973M, when ready, at pilot's discretion, descend and maintain 5,000.
N973YM:	Down to 5,000 my discretion, 3YM.
MWCR_APP:	CAYMAN 4009, report the field in sight or the CBC NDB, whichever comes first.
CAY4009:	Will call the field or the NDB, Cayman 4009.
CAY4009:	Field in sight, Cayman 4009.
MWCR_APP:	CAYMAN 4009, cleared visual approach runway 09. Make straight-in and report 5 mike final.
CAY4009:	Cleared visual 09, call you 5 mile final, 4009.
MWCR_APP:	N973YM, descend and maintain 3,000. Report the field in sight or the CBC NDB, whichever comes first.
N973YM:	Down to 3,000. CBC or the field, 3YM.
CAY4009:	Cayman 4009 is 5 mike final, runway 09.
MWCR_APP:	CAYMAN 4009, Contact Brac Tower on 118.4
N973YM:	Field in sight, 3YM.
MWCR_APP:	MOONEY 3YM, cleared visual approach runway 09. Make straight-in and report 5 mile final.

Note: This is an example of the composite separation method for Handling successive arrivals that are not longitudinally separated (using a handful of altitude reports to progressively clear vertical levels for succeeding aircraft. For more information on this method see Section 4.15.5.

4.23 Handling of VFR Flights

International VFR flights are prohibited in the Cayman Islands, so the only VFR flights that APP control will have to deal with are flights traveling between MWCB, MWCL, and MWCR. Since separation services are not provided to VFR Flights in Class D airspace, APP need only ask for basic reports. Inter-TMA IFR flights operating concurrently with VFR flights should be assigned cruising altitudes at least 1,000 feet different from any planned VFR cruising altitudes.

VFR Terminal Phraseology

"<CALLSIGN>, Cayman Approach, good day. Report level at <CRUISE ALTITUDE>."
"<CALLSIGN>, roger. Contact <BRAC TOWER/OWEN ROBERTS TOWER> on <FREQUENCY>."
"<CALLSIGN>, roger. Next report <GRAND CAYMAN/THE BRAC/LITTLE CAYMAN> in sight."

Example: VFR Flight (MWCR-MWCB)

6Y-JJC - VFR		**C206/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - **MWCB**	A075	DCT

6Y-JJC:	CAYMAN APPROACH, Cessna 6JC airborne out of 08.
MWCR_APP:	CESSNA 6JC, Cayman Approach, good day. Report level at 7,500.
6Y-JJC:	Roger, call you at level at 7.5, 6JC.
6Y-JJC:	Cessna 6JC is level at 7,500.
MWCR_APP:	CESSNA 6JC, Brac QNH 1014, report leaving 7,500.
6Y-JJC:	6Y-JJC leaving 7,500 for lower.
MWCR_APP:	CESSNA 6JC, Roger, report the Brac in sight.
6Y-JJC:	Call with Brac in sight, 6JC.
6Y-JJC:	Brac in sight, Cessna 6JC.
MWCR_APP:	6Y-JJC, join and report right base, runway 09.
6Y-JJC:	Join and report right base 09, 6JC.
6Y-JJC:	On the right base, 6Y-JJC.
MWCR_APP:	CESSNA 6JC, contact Brac Tower on 118.4.

Example: VFR Flight (MWCR-MWCL)

N589PU - VFR		**SR20/G**
CITYPAIR	**CFL**	**Filed Route**
MWCR - MWCL	A055	DCT

N589PU:	CAYMAN APPROACH, Cirrus 589PU airborne, climbing to 5,500, VFR.
MWCR_APP:	N590PU, Cayman Approach, good day. Report level at 5,500.
N589PU:	Roger, call you at level at 5,500, Cirrus 9PU.
N589PU:	Cirrus 9PU is level at 5,500.
MWCR_APP:	CIRRUS 0PU, Brac QNH 1014, report leaving 5,500.
N589PU:	N589PU leaving 5,500.
MWCR_APP:	N589PU, Roger, report Little Cayman in sight.
N589PU:	Call with Little Cayman in sight, 9PU.
N589PU:	Little Cayman in sight, 9PU.
MWCR_APP:	N589PU, roger, contact Brac Tower on 118.4.

4.24 Coexistence of IFR & VFR Flights

Both IFR and VFR flights receive ATC services in the Class D airspace (up to 10,500) that comprises the lower half of the Cayman Islands TMA. However, IFR aircraft are separated only from other IFR aircraft, and VFR aircraft are not separated at all. IFR aircraft receive traffic advisories about VFR aircraft. VFR aircraft receive traffic advisories about VFR *and* IFR aircraft:

Example: IFR-VFR Traffic Advisories

MWCR_APP:	CESSNA 6JC, be advised, IFR traffic is opposite-directional, a Saab 340 level at 7,000 feet. Estimating TEXAM at 0232Z.
MWCR_APP:	CAYMAN 103, be advised, conflicting VFR traffic is same-direction, a Cirrus SR20 level at 4,500 feet, a Cirrus SR20. Crossed TEXAM at 1900Z.
MWCR_APP:	JETBLUE 765, be advised, VFR traffic is on a converging track, a DeHavilland Twin Otter last reported leaving 6,500 for lower. Estimating the Owen Roberts airport at 1743Z.