LEARNING SID's & STAR's

By Timothy Berry.
Checked & Edited by Danil Premgi.

Welcome to Learning SIDs & STARs. In this guide you will learn how to fly **SID (Standard Instrument Departure)** and **STAR (Standard Terminal Arrival Route)**.
You will learn the basics.
So let's get started…

What Is A SID and a STAR?

SID's and STAR's are just guides that tell you how to depart and arrive to an airport, you will most likely find SID's and STAR's at busy airports, used to keep traffic moving when ATC (Air Traffic Control) cannot handle many planes at a single time, it is also to keep separation between planes.

When flying on VATSIM, IVAO and other online virtual air traffic networks using flight simulators like Microsoft Flight Simulator or X-Plane you shall need SID and STAR charts.

A way to remember each one is to think of something like *"You leave heading for SID, and arrive by following the STAR's"*. I will leave that one up to you.

SID's (Standard Instrument Departure)

The next page shows a SID of **Manchester International (EGCC)**.

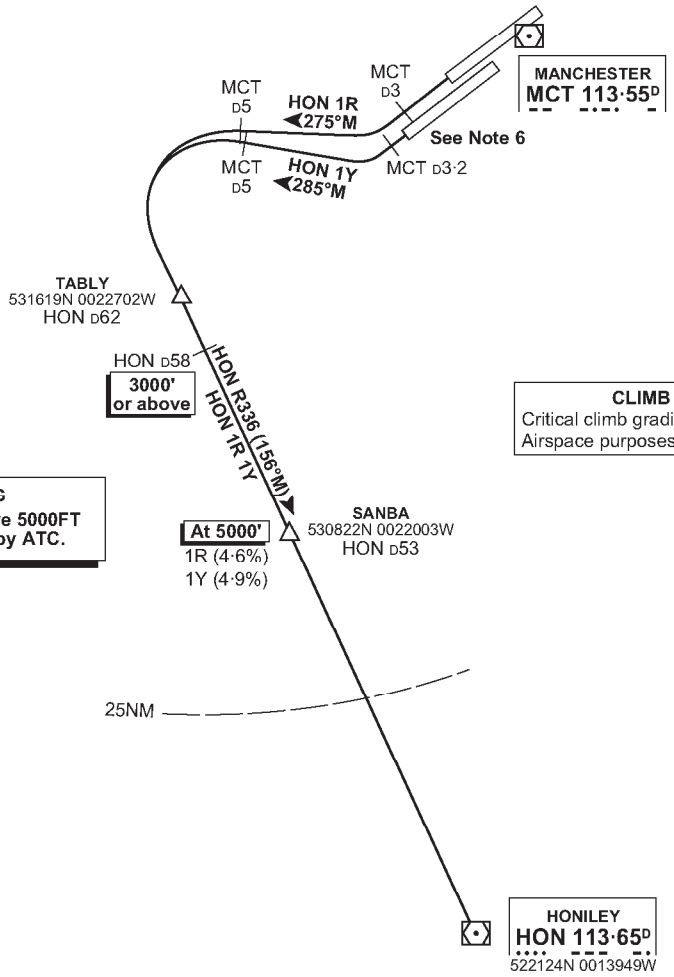
HONILEY SIDs - RUNWAY 24L/24R MANCHESTER

GENERAL INFORMATION
1 SIDs reflect Noise Preferential Routeings. See EGCC AD 2.21 for Noise Abatement Procedures.
2 **No turns below 757' QNH (500' QFE).**
3 Cruising levels at FL190 and below will be allocated en-route by 'Manchester Control', cruising levels above FL190 will be allocated en-route by 'London Control'.
4 Callsign for RTF frequency used **when instructed** after take-off 'Manchester Control'. On first contact advise callsign/SID designator current altitude and cleared altitude.
5 Max IAS 250KT below FL100 unless otherwise authorised.
6 **WARNING: RUNWAY 24L. In the event of a missed approach on runway 24R ATC may instruct aircraft which have departed from runway 24L to make a LEFT turn in order to establish separation.**

TRANSITION ALT 5000'

NOT TO SCALE

NOTE: Non-jet and certain specified aircraft will be cleared via LISTO 1R/1Y (see AD 2-EGCC-6-5).
Pilots must ensure adherence to clearance as issued by ATC.



CLIMB GRADIENTS
Critical climb gradients required for ATC or Airspace purposes are shown.

WARNING
Do not climb above 5000FT until instructed by ATC.

AVERAGE TRACK MILEAGE TO **HON VOR**

HON 1R	71
HON 1Y	69

SID	RWY	ROUTEING (incl. Noise Preferential Routeing)	ALTITUDES	AIRWAY ROUTE
HON 1R Jet ACFT only 134·425	24R*	Climb straight ahead (See Note 6). At **MCT** D3 turn right onto track 275°M. At **MCT** D5 turn left to **TABLY** to intercept **HON VOR** R336 to **HON VOR**.	Cross **HON** D58 (**MCT** D10) at 3000' or above **SANBA** (**HON** D53) at 5000' (4·6%).	N615 Southbound
HON 1Y Jet ACFT only 134·425	24L	Climb straight ahead (See Note 6). At **MCT** D3·2 turn right onto track 285°M. At **MCT** D5 turn left to **TABLY** to intercept **HON VOR** R336 to **HON VOR**.	Cross **HON** D58 (**MCT** D10) at 3000' or above **SANBA** (**HON** D53) at 5000' (4·9%).	

OBSTACLE CLEARANCE
* RWY 24R: Close in obstacles exist below 100' AAL and are not considered for procedure gradients.

CHANGE WARNING BOXES ADDED. OBSTACLE CLEARANCE NOTE. VOR HON RADIALS UPDATED.

AERO INFO DATE 14 JAN 04

You have just witnessed SID, once you know how to use SID, everything will become easy (easier than using an OS map!).

OK, so let's break it down…

AD 2-EGCC-6-8 (18 Mar 04) UK AIP

HONILEY SIDs - RUNWAY 24L/24R **MANCHESTER**

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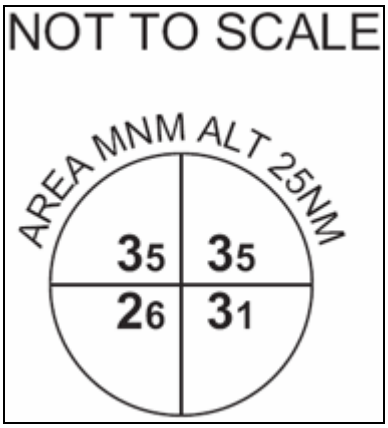
6 **WARNING: RUNWAY 24L. In the event of a missed approach on runway 24R ATC may instruct aircraft which have departed from runway 24L to make a LEFT turn in order to establish separation.**

This part is the **NOTAM (Notice To Airmen)**. It tells you what you can and can't do. A quick read is all you need.

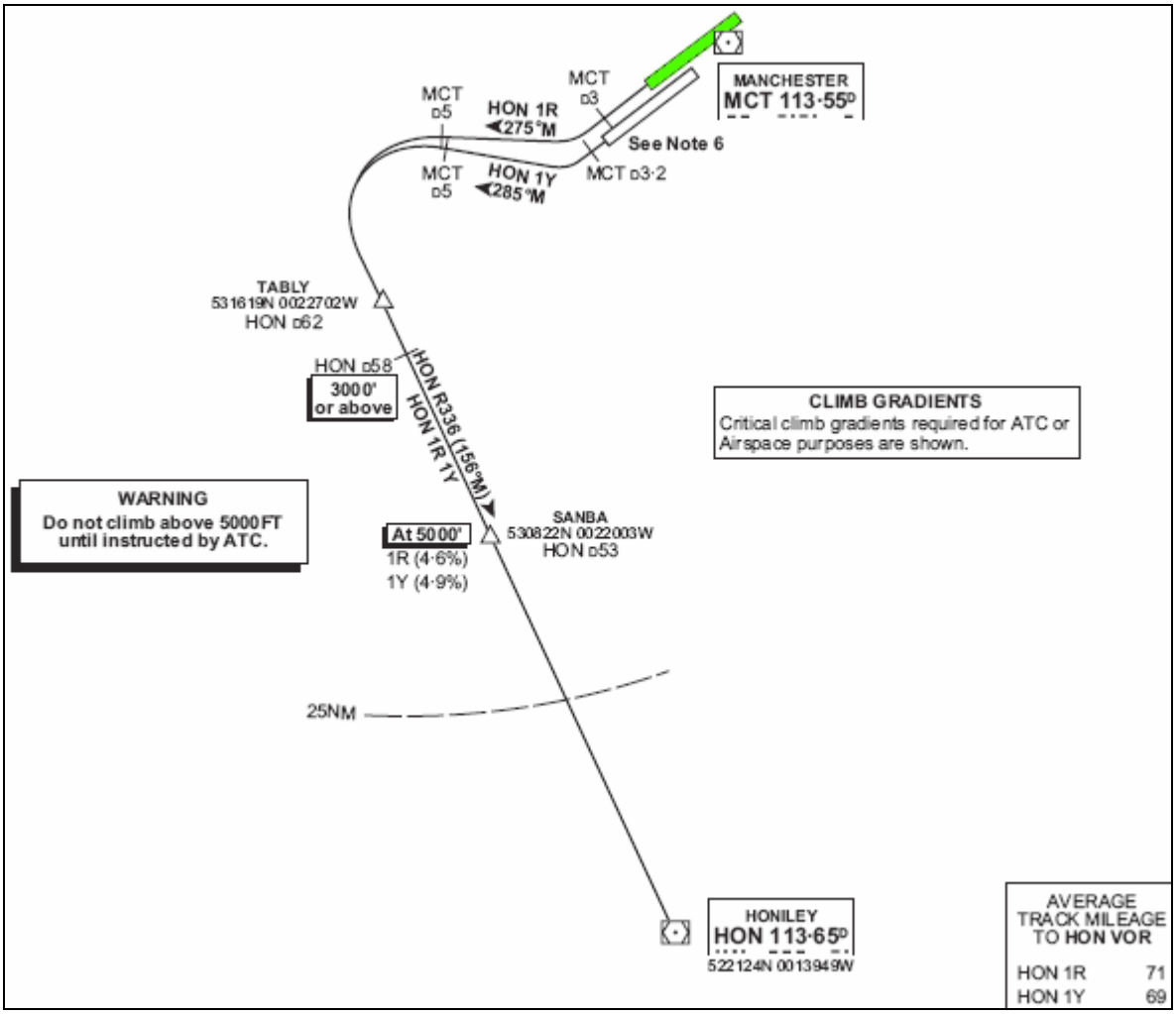


Have you noticed that the map has no terrain details? The small circle solves the problem and saves a lot of ink! by showing the average or max height in the area. The top left box shows 35, it does not mean 35ft it means 350ft, so we just need to add a 0 to them all.

NOTE: Non-jet and certain specified aircraft will be cleared via LISTO 1R/1Y (see AD 2-EGCC-6-5).
Pilots must ensure adherence to clearance as issued by ATC.

TRANSITION ALT 5000'

The box on the left is another NOTAM telling what you should do. The right box is telling you the **Transition Altitude**, when you set your Altimeter to 29.92 or the same amount for the QNH setting (used in Europe, this is the metric version). In Europe this height is pretty low at around 6000ft for most airports (you will get this from ATC), in America I think it is 18000ft all around.



This is the part that stumped me when I was trying to learn how to read the chart, *'what do I follow?' 'Where do I start?'*.

Let's say you've been cleared to fly **Honiley One Yankee (HON1Y)**. Can't find it yet? It's in the centre at the top. You will need to follow that line. So you take off from runway 24R (runway in green), before you do this you need to tune into **Manchester VOR (MCT 113.55)**. You fly the runway heading until you get to **MCT D3**, all that means is when your 3nm (nautical miles) from the MCT VOR you turn right heading 275 continue flying until your 5nm away from MCT VOR, then turn left heading 156 over **TABLY** which is 6.2nm away from MCT VOR, at this point you should be at 3000ft or higher (written in the box), climb to 5000ft and fly straight to **HON**.

SID	RWY	ROUTEING (incl. Noise Preferential Routeing)	ALTITUDES	AIRWAY ROUTE
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OBSTACLE CLEARANCE * RWY 24R: Close in obstacles exist below 100' AAL and are not considered for procedure gradients.				
CHANGE WARNING BOXES ADDED. OBSTACLE CLEARANCE NOTE. VOR HON RADIALS UPDATED.				

The table at the bottom shows text information to go with the chart. It tells you the SID name, the runway in which you depart from, the route you should take, and the altitude you should fly at each point. **Airway Route** isn't that important, **Obstacle Clearance** is for real world flying and **Change** tells you what you missed out on from the last edition!

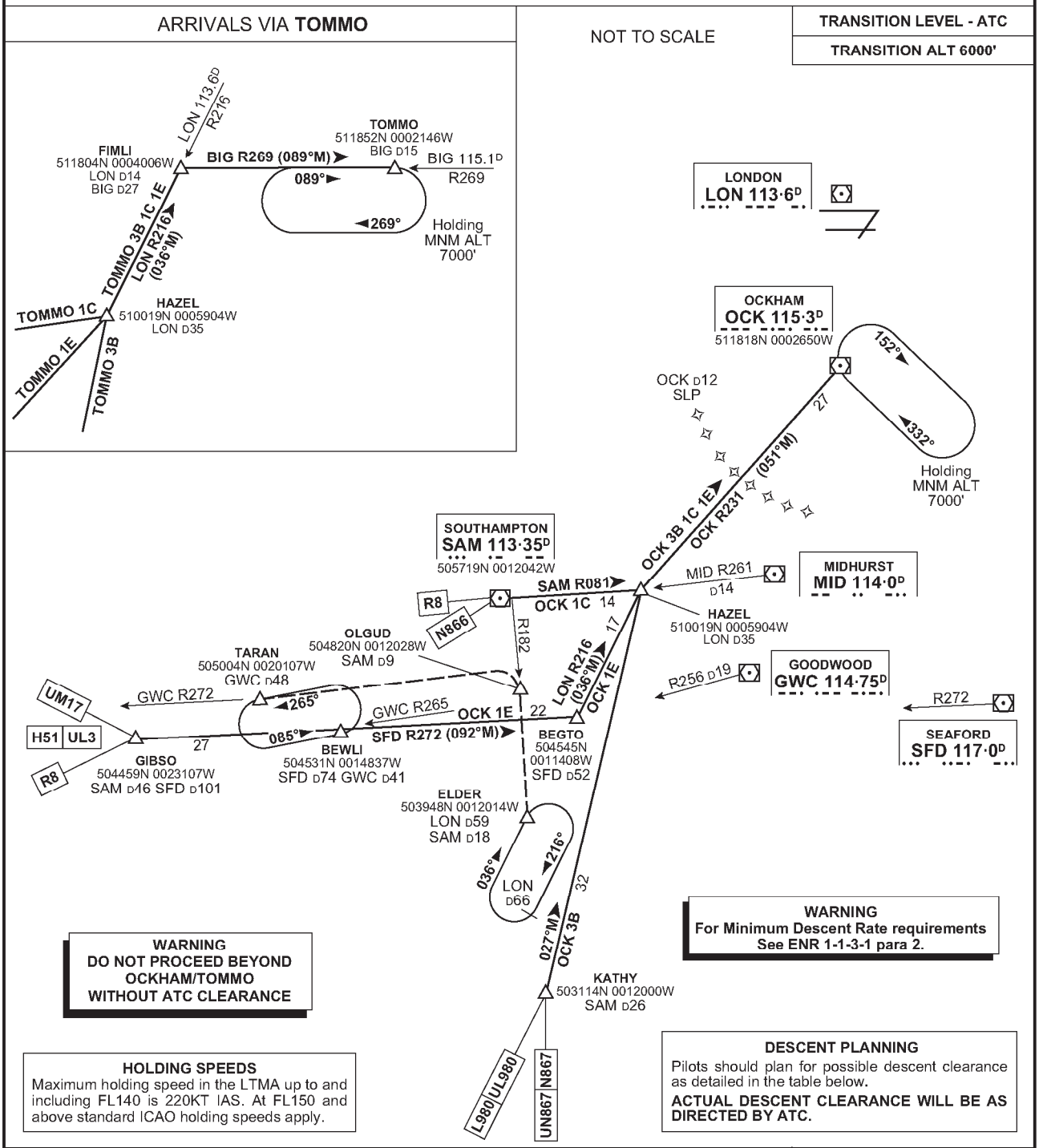
STAR's (Standard instrument Departure)

You've (hopefully) learned the basics to flying SID's. I won't go into as much detail on STAR, but I have to give you a warning, STAR's (in my opinion) are harder to workout than SID's, with SID's you see where the runway is and you can just follow the yellow brick road, but with STAR's all your given is lots of lines and If your lucky a stick diagram of the runway. But there's no need to fear, STAR's only guide you into the airport were you should get vectors to intercept the ILS or fly visually.

The next page shows a STAR of **London Heathrow (EGLL)**.

STARs via OCKHAM (southwest) LONDON HEATHROW

GENERAL INFORMATION
1 Standard Routes may be varied at the discretion of ATC.
2 Cross SLPs or 3 min before holding facility at 250KT IAS or less.
3 When **OCK VOR** is out of service route via **FIMLI** to **TOMMO** hold. Designators will become TOMMO 3B, 1C & 1E.
4 As lowest level in **OCK/TOMMO** holding stacks (7000') is above transition altitude, aircraft will be instructed by ATC to fly at the appropriate flight level.
5 The routes shown also apply to aircraft inbound to **Northolt**.
6 En-route holding at **ELDER** (FL110-FL150) or **BEWLI** (via **OLGUD - TARAN**) as directed by ATC.



STAR DESIGNATOR	VIA	ROUTE	DESCENT PLANNING
OCK 3B	L980/UL980, N867/UN867	**KATHY - HAZEL - OCK VOR** (Note 6)	FL130 by **HAZEL**
OCK 1C	N866 (FL100 & below), R8 (FL150 & below),	**SAM VOR - HAZEL - OCK VOR**	FL130 by **HAZEL**
OCK 1E	R8 (FL160 & above), UL3/H51, UM17	**GIBSO - BEWLI - BEGTO - HAZEL - OCK VOR**	FL180 10nm before **BEGTO** FL130 by **HAZEL**

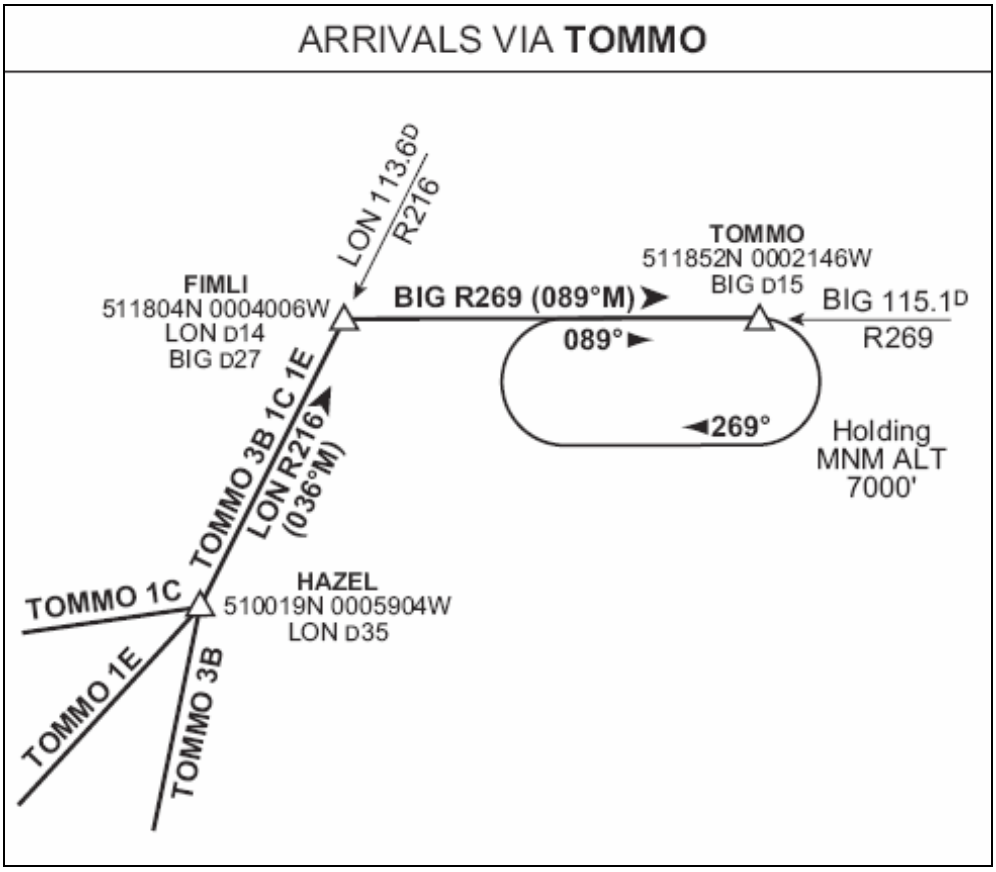
CHANGE ELDER HOLDING AXIS UPDATED.

AERO INFO DATE 26 APR 05

It's a pretty big constellation isn't it? And that's only three routes! I picked a trickier one this time, I've chosen London Heathrow (EGLL) which is more busier than Manchester (EGCC) and has some interesting markings.

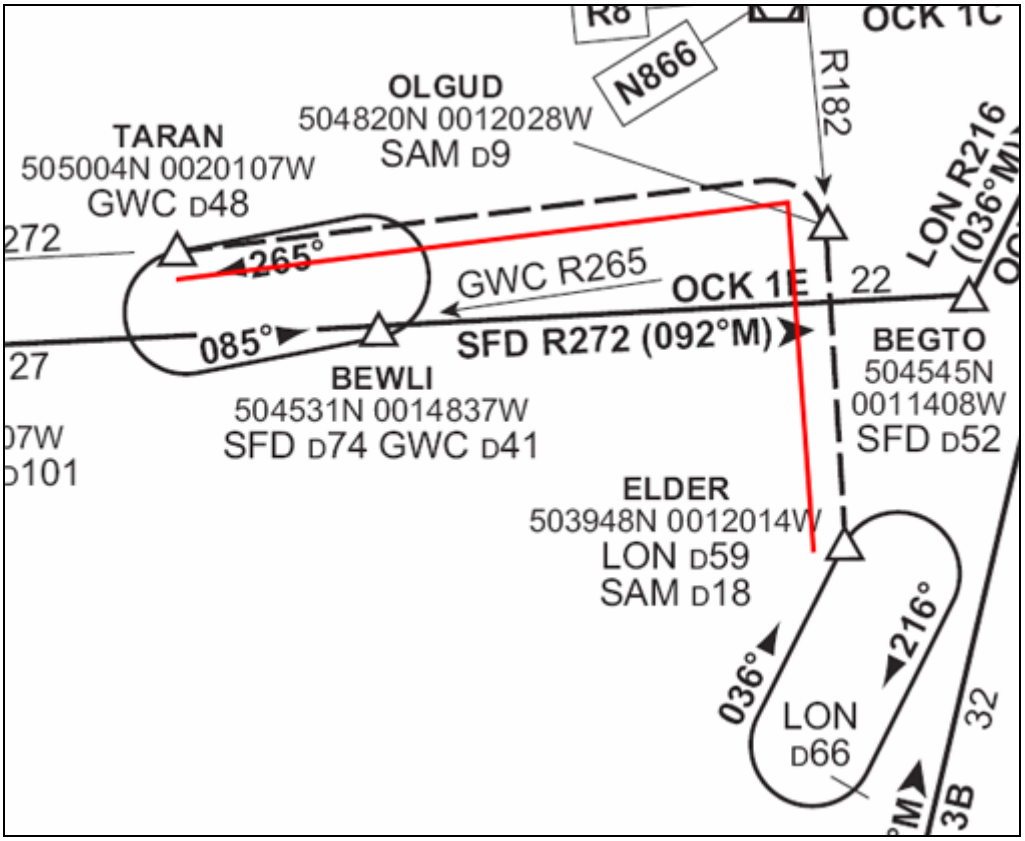
For this one, we shall fly the **Ockham Three Bravo (OCK3B)**. The trick is when looking using a cluttered STAR like this is to focus on the black line and the text that goes with that black line.

So at the top we've got the NOTAM. **Transition Level** is just the same as **Transition Altitude** but for when you're descending. In this chart you're given **Transition Level (TL)** by the ATC, the **Transition Level** might be affected by things as weather.



This box is just another STAR added on, most likely to save ink and paper. I will go into detail about the other STARs and things should become clear.

Assume we are flying Jetway **UN867** heading north (if you haven't found the STAR it's the bottom one pointing up). We first fly to **KATHY** we turn right heading **027 M** (the M standing for Magnetic). We start descending to 13000ft (FL130). Once we get to **HAZEL** we turn right onto the **OCK VOR** where we either get vectors from ATC or fly to the holding pattern.



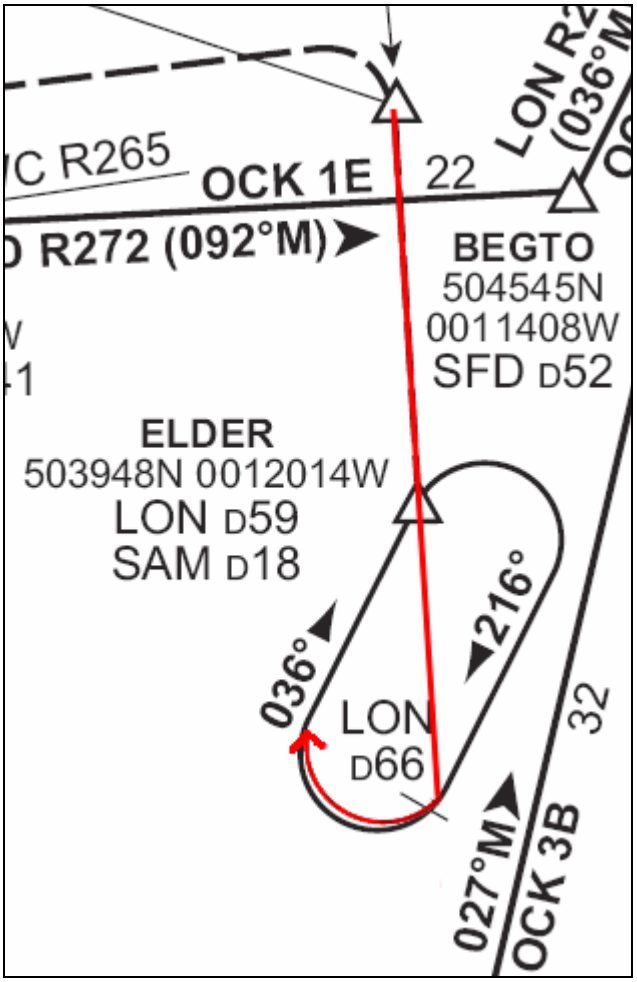
Now this is something I would like to point out that is quite interesting. Next to the red line is a dashed line. For example you were holding at **BEWLI** and **TARAN**, another aircraft joins the holding pattern, later on another aircraft is about to join the holding pattern, ATC asks you to hold at **ELDER**, all you need to do is follow the dashed line.

All of the other boxes say what they do on the tin, you just need to follow them sensibly.

How To Join A Holding Pattern.

This is just an added extra for people who don't know how to join a holding pattern.

There are some special moves you have to pull off in order to enter a holding pattern.



Here you fly down to **ELDER**, but instead of flying a sharp left turn you keep flying until you get 66nm miles away from **LON VOR**, then all you need to do is make a nice gentle smooth left turn into the holding pattern.

For example if you are flying the heading of the inbound track in the holding point you should already be in the holding point (example look at **TOMMO** holding point).

Hopefully you have learned to fly SID's and STAR's.

Getting Charts.

If you need any charts you can look on Google by searching something like "LSZH charts" or you can look on VATSIM or IVAO (I know these sites have charts), your best bet for finding charts is in the division pages, like UK or USA. Another way is on the countries Aviation Authority website, they might not have them, but if they do they might be under the lines of **AIP**.

The charts used here are available at **AIS (UK Aeronautical Information Service)**, anyone can join, but for your reason for joining put Flight Simulation, IVAO, VATSIM.

To get charts you will need to go **http://www.ais.org.uk** → **Sign In** → **Publications** → **UK AIP** → **UK AIP Package** → **UK AIP** → **Aerodrome Data** → **Aerodromes – Specific**, and look for the chart of you choice. You shall have a list of all the charts in the UK.

One final note: Even though I used UK charts, different countries use different styles and layouts even new words not shown here, but there's no need to worry, all work on the same foundation "follow the line". Also companies/countries like Jeppesen and Greece (for example) have the terrain printed out on them.