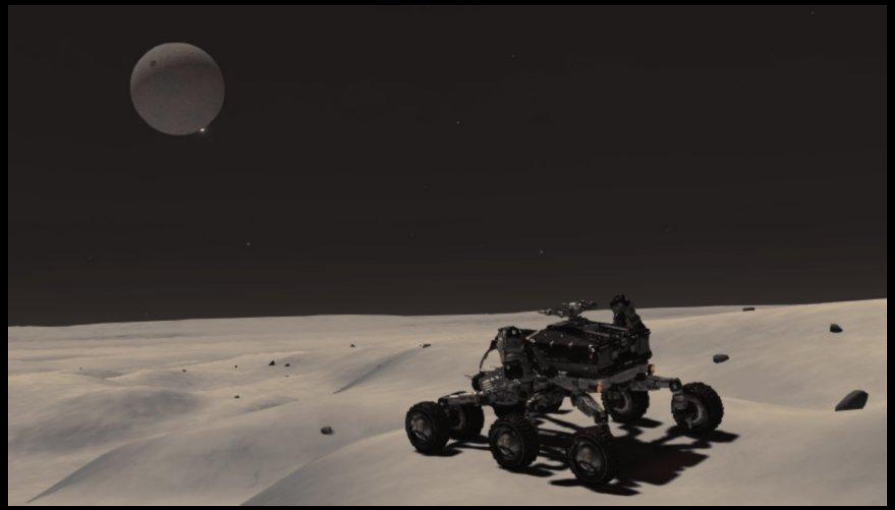
# The popular guide to planetary landings

## *and Odyssey!*



"That's no moon..."

**By Lance 'Spacecat' D.**
**of Aisling's Angels**

*Last update: Sept 30th 3307 (WIP)*

# The purpose of this document

*Horizons offers us planetary landings, and it's good fun: there are planetary missions to do, you can find materials that reload and improve your guns, missiles or boost your jump range plus all the elements needed by engineers. So there's useful stuff out there on the ground. And Odyssey gives us space legs, settlements and many missions.*

*It is also risky: I've cratered a few ships on high-G worlds, and lost count of the number of times I ran from guards or bandits on settlements.*

*This document's intent is to offer advice about planetary landings, explain how to use the SRVs and explain the essentials of Horizons and Odyssey's planetary experience.*

# Setting up your ship for landing

*Besides having the Horizons or Odyssey update, you will need a 'planetary approach suite' (which is setup by default) on your ship to land on planets. This will allow you to approach planets and land.*


*-A **planetary vehicle hangar** will allow you to carry SRVs. These come in class 2, 4 (holds two bays) and 6 (four bays). Don't forget to fill the bays. The SRV is doubly useful for Odyssey as you can recharge your suit and resupply your grenades and batteries, or even change your suit loadout.*

*-A **shield generator** is highly recommended, since most landings are a bit bumpy. Fair thrusters are desirable (a D-rating thruster of the max class works fine if you fly carefully. I've landed on a 6.7G world with a 4D thruster on my type-6) and you probably want a good enough distributor to be able to boost.*

*-A **detailed surface scanner** is almost mandatory. It will help you find geological sites, various POI in Odyssey and life zones for xenobiology research.*

If you die in a buggy you will have the option to return to your ship, or to start in a new buggy if you have several on your ship.

So you act a bit more recklessly in a SRV, it's forgiving.

# Good things come in small packages

*When landing on planet surfaces, you're no longer fighting other ships. Instead it's all about your SRV driving skills, or your sneakyness and skill on foot. So using a big ship like a conda, cutter or corvette isn't an edge anymore, indeed it can play against you as most Odyssey settlements only have small landing pads.*

*The small ships thus gain in utility: They can land at all Odyssey settlements and easier to land, here are some small ships that shine for planetary work:*

*-The Adder is low cost and can carry a teammate.*

*-The Diamondback Explorer is famous for its jump range and running cool.*

*-The Cobra Mk3 is an excellent multirole ship with good internals and fast on boost. Carries a teammate too.*

*-The Dolphin has excellent internals (second only to the rare Cobra Mk4), style and agility.*

*-The Vulture has superb shields and carries a teammate.*

# Sidenote: Tools of the trade

*There's a lot of third party tools and websites to help the Elite: Dangerous experience. Some of the most used websites are...*

*www.edsm.net is a favorite for explorers, for knowing what's where.*

*https://inara.cz/ for your commander information, engineering materials needed and so much more.*

*https://eddb.io/ for trade information, finding modules, or to find that anarchy tourism settlement.*

*https://www.spansh.co.uk/plotter is a 'neutron plotter', and has remarkable planetary search features.*

*In order to 'feed' these useful websites, It's necessary for commanders to use one of a few third party tools: EDDiscovery or the Market Connector (EDMC) for instance. I personally use the market connector with an extra plugin from Canonn research, and advocate their use.*

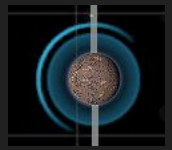
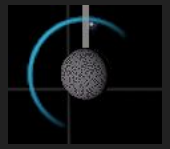
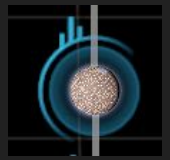
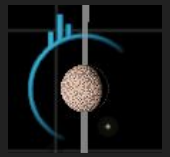
https://github.com/EDCD/EDMarketConnector/wiki/Installation-&-Setup

https://github.com/EDCD/EDMarketConnector/wiki/Plugins


You can even click a feature you found to get a bearing, thank you Canonn.

# Reading the system map

*Here let us assume you know how to use the FSS and the Detailed Surface Scanner to discover a system.*
*Now here are a few pointers for how to read the various icons, it will help you find areas of interest.*

| | Atmospheric | Non-Atmo |
|---|---|---|
| Non landable worlds: |  |  |
| Landable worlds: |  |  |
| Landable worlds with settlements: |  |  |

Atmospheric landable worlds will often have biological features one can scan for xenobiology.

*On a planet surface, here are the icons you'll find in your navigation panel.*

 *Surface port (Features similar to star ports)*

 *Odyssey settlement (Smaller ships can land there)*

 *Horizon settlement (SRV playground)*

 *Points of interest (Very varied)*

# Respect gravity, it's the law!

*For your safety I strongly recommend you keep an eye on the gravity of a planet before landing!*
*And practice: landing is tricky, landing on a high G world is dangerous! I recommend you setup a cheap ship and practice on several worlds of varying gravity before going off in something pricey.*
*You'll likely go Wile E. Coyote a few times.*


Any landing you can walk away from…

The Gs are shown at the bottom right of the HUD during a planetary approach:


*I personally started in an imperial eagle, did 4-5 landings. Moved on to my 'Sundiver' type-6 and still cartwheeled like a tumbleweed on a 2.5G world…*

*Another half-dozen landings later I landed and took off sans shield from Achenar 3, a 6.7G world.*

*Practice makes perfect.*

# The planetary approach - 1

*When approaching a planet in supercruise, you'll enter 'orbital cruise' altitude when close enough. And all the flight indicators kick in. You're still in (slow) supercruise, but can go faster if you level your ship to zero degrees.*

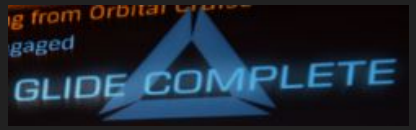
*Assuming you picked a landing spot, I recommend a -30 to -50 degrees approach, do not dive down too directly. The goal is to hit the 'drop' altitude at less than 9 km/s speed. I find keeping the ETA between 7-8 seconds works best, which means frequent adjustments of the throttle. (Whereas for space targets, it's 6-7 seconds, I know)*


*Orbital glide is the best approach, hence my advice to make your orbital approach from around -30 to -50 degrees.*

Reentry: Best done at an angle

# The planetary approach - 2

*Down to 6-8km altitude or so, your ship comes back to normal speed. It's very tempting to boost downwards to save time on these final few kilometers.*




**Don't!**

*Gravity might drag you down and speed you towards your demise. This is the risky moment where you need to be patient and fly safe. And keep an eye on your altitude indicators, they will save your life.*


"Going down?"
These meters are your friends.

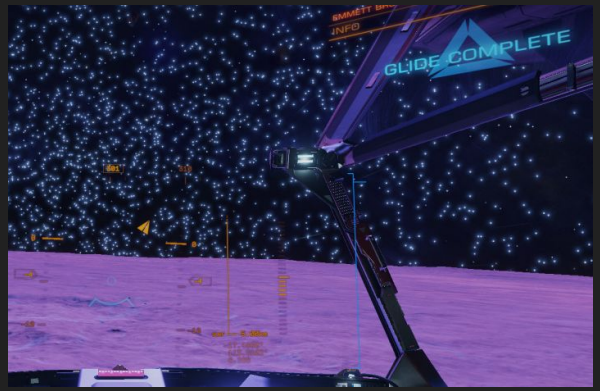
*-The 'down' thrusters that keep you up use 'spare' engine power. So if you're going full speed or making tight maneuvers, they won't have much power and you'll lose altitude. Go slow and you keep control.*
*-Keep your ship belly towards the planet, the side and roof thrusters aren't as powerful.*
*-If on a high G world and you need some speed, try tilting your nose down a bit.*
*-Use your manual up-down thrusters for control, obviously.*
*-If you keep your boost ready, you can nose up and boost to avoid a crash, maybe.*

*These tips will keep you safe, remember that you're flying a space brick, not an aircraft.*

# Bonus course: High G Landings - 1

*Landing on a planet with 1G or less is straightforward: Don't dash down at terminal velocity. But when dealing with 3 or more Gs, some knowledge and technique becomes necessary… Here I am giving tricks about extreme G landings, 4G and up. If you can handle this, you can handle anything.*

**Level up immediately as you come out of glide.**
*If you come out of glide at too sharp an angle, you may not be able to slow down the dive.*





**Important Knowledge:**
*-Ship thrusters can't give more than 3Gs or so, the game 'cheats' a little at higher gravities.*
*(So having weak or strong thrusters on your ship doesn't really matter)*

*-The cheat empowers your down and rear thrusters, not the side, front nor top ones.*

*-This means if you roll or point down, you immediately lose altitude:*
***Stay level or nose up.***

# High G Landings - 2

*Now that you are level at a safe altitude, there are a few safe ways to go down to the surface.*
***DO NOT TOUCH THE DOWN THRUSTERS!*** *That is an unsafe thing to do in a high G situation.*
***DO NOT ROLL YOUR SHIP!*** *The side thrusters can't keep you up, remember?*


Keep an eye on altitude and speed of descent.

***Method one: Nose down.***
*-If you nose down slightly, 10-20 degrees and maybe add a bit of forward velocity, your ship will lose altitude gradually in a controlled manner.*

***Method Two: Double tap flight assist.***
*-Flight assist is keeping your down thrusters at full power, if you turn them off and on really quick (double tap the key) you'll lose 10-100 meters of altitude. Once you are close to the ground with landing gear down, it's a good way to actually land.*

***Don't go too fast, be patient.***
*A good rule of thumb is for downward speed to not exceed 200 m/s at 2km altitude, 100 m/s at 1km, 50 m/s at 500m, etc.*

Stay level at all times, do not roll.
Side thrusters cannot keep you up.

# Touchdown!

*Close to the ground your scanner will show the local topographical map. It's time to break out the landing gear! Move around till you find a flat enough surface and your icon will turn blue, that means you can go down gently for the actual landing. Try starting level, if you're tilted then go down, the blue circle will move a little.*

***Protip: On high-G planets, Instead of thrusting down, you can quickly turn off and on flight assist.***


# Bring out the buggy!

*Time to test your controls. The 'role panel' (bottom orange screen, key '3' for PC) is used to open up a panel to launch (or redock) SRVs, transfer cargo, disembark on foot, send away or recall your ship, etc…*

*Important controls to setup, or to set in fire groups are the 'data link scanner/composition scanner' which will be explained later. The jump jets, and the key for 'toggle SRV turret' (how to get in and out of turret mode).*


*Take the time to adjust and test your controls, 'drive assist off' lets you drive like in an arcade-car-game, and most commanders find that more intuitive.*

*You have jump thrusters that are pretty effective, and the 'roll' controls are so powerful you can do a barrel roll while using the jump jets.*

*My advice here is to take a while to drive around and get used to your controls, make sure your turret is usable, jump around a bit, have fun!*

# Keeping your SRV healthy

*As you roll around, and take a few bumps you'll take damage to the SRV's hull since its shield doesn't protect from crashes. You'll use ammo as the turret is a plasma repeater. And your fuel will slowly dwindle down.*

*So that's three things to keep track of, to keep your SRV in a good working condition:*

*-SRV Fuel, refueled when your ship is at station,*
*or easily synthesized from sulphur and phosphorus*
*-SRV ammo, reloaded in stations*
*or synthesized from… sulphur and phosphorus again.*
*-Hull damage is very easy to fix:*
*Just re-enter your ship and go back out.*

*Apparently there's a repair rig in the ship's vehicle hangar, very handy.*


Ammo, Hull, fuel. Three things to watch!

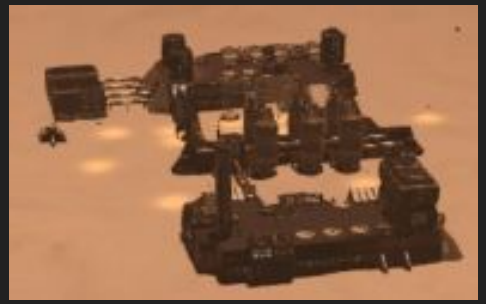
# Horizon settlements

*Pick a Horizon settlement, maybe one you have a mission at. (They won't have any landing pads)* 

*A settlement's name will read '+' '++' or '+++' as it gains in size - and defenses. The security level (Nil, low, medium, high) increases the size of its 'forbidden zone'. Try and land 1-2 km away since the anti-air turrets may kill your ship, after a friendly warning and a few seconds…*

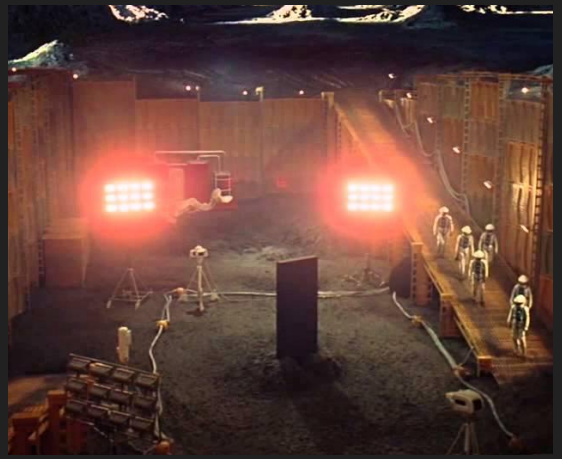
*Trespassing, fighting their drones and fiddling with their terminals may get you fines and bounties, yet that's how you complete missions for other factions and get data vouchers.*
*So think of it this way: Horizon settlements are SRV playgrounds. Go go gadget car!*

Horizon Settlements come in many shapes and sizes



# Forbidden zones and drones (Horizons)

*At certain settlements (and at certain Points of Interests) there is a 'forbidden zone' indicated on your scanner by a red rectangle. That area will trigger drones and you will get a few seconds warning to get out before they become hostile. Also, expect fines and bounties from the appropriate faction when the shooting starts. But for now, just avoid the area until we've mastered the datalink scanner*



Forbidden zones cover important or interesting things…

*Drones aren't too hard a fight for your SRV, as long as you use your turret, target skillfully and aren't facing the dreaded 'Goliath'.*

# Horizon settlement defenses

*Besides drones, settlements use a variety of turrets. The anti-air ones are really nasty on your ship, the ground ones aren't too big a threat for your SRV, as long you don't tackle several at a time.*

"Defense platform" ground guns

"Defense turret" anti-air


That anti-air turret is bigger than my ASP!


You can blow up generators to disable most turrets. Some missions make that request, in fact.

*Settlements may have a low, medium or high security indicator, giving you a hint to the harshness of the defenses. Keep an eye on that.*

# Terminals and the datalink

*Ground missions often request to interface with an operations terminal or the like. Just target the tower (being in turret mode helps) and hold the datalink fire button. If it's not public, expect that action to be criminal (Think of it as stealing data from that faction). Data points are another kind of terminal I'll discuss next.*

Public indicator means you won't anger the local defenses.


The datalink has a little animation here to show it's working

*This is very cyberpunk isn't it? You need to get your gadget car close to a physical contact point to hack a place for some data.*

*Well, I guess the corporations were sick of hackers just waltzing in from afar. Now you have to get in close.*

# Data points

*Data points are interface towers found in settlements, and sometimes at POIs (near a crashed satellite for instance). Even without a mission you can interface with them to earn a data packet, a kind of exploration bounty. If the tower isn't public, think of it as stealing data from the settlement you're at. And the alert will sound.*

*'Fire' your data link scanner at data point to get the data, same as terminals.*


Luckily, data point towers are usually public

*For settlements, you sometimes have to hit 3-4 towers in quick succession. If you miss the timer, you'll have to restart the whole series.*



Rewards are intel like this, or data 'materials' for engineers.

Intel data is similar to bounties.

# Skimmer hunting missions (Horizons)

*Out of the planetary missions given on bulletin boards, 'Skimmer massacre' missions have a peculiarity worth mentioning here:*

***You're better off not attacking the settlement mentioned in the mission!***

*It is very counter-intuitive, I know, but if you attack the mentioned settlement you will rack up bounties and make a faction angry with you. Luckily there's a trick to those missions:*

***Look for POIs within 30 km of the settlement, and hunt wanted skimmers there!***

*Points of interest have skimmers about half to two thirds of the time. Now pay attention if they're wanted or not. If they're clean, I suggest moving on to the next POI.*

*If they're wanted, they're worth 1000 credits apiece and won't hit you with a bounty nor will anger the faction they're related to. So they are perfect for hunting down, and invariably will match the faction of the nearest settlement.*

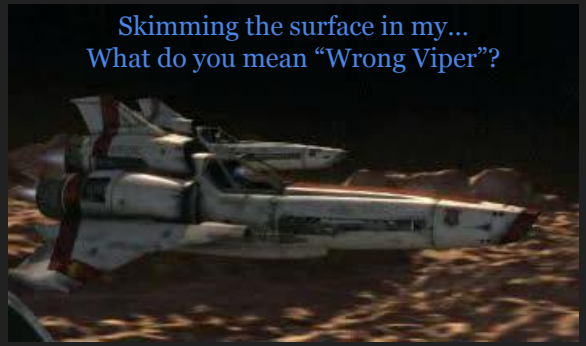
*I explain how to look for POIs in the next few pages...*

Not the droids we are looking for.

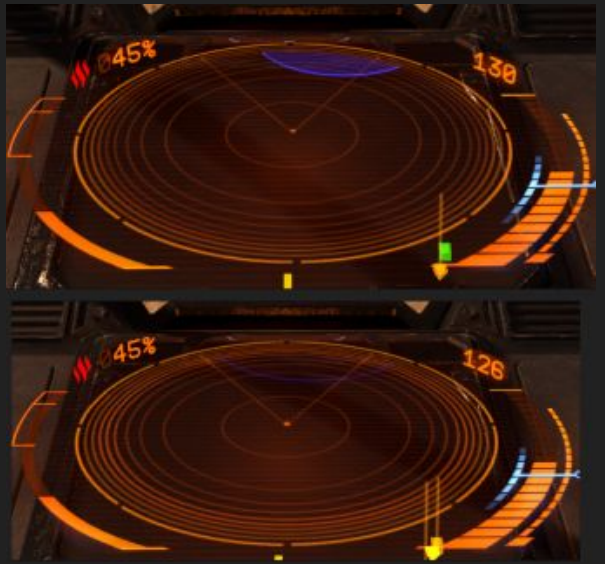
# Landing near a POI (Horizons)

*Take off and fly to 2km altitude, then zoom away from any settlement. Scattered on the surface are 'points of interest'. These may be crashed ships with some remaining cargo, hidden pirate outposts guarded by drones, automated mining operations, crashed satellites offering their data… And so on. There are many planet missions relating to these points of interest. Much like signal sources in space.*

*To find a POI just fly and skim the surface (2km altitude is good) until a blue circle appears on your scanners. As you lose altitude or get too close, it will vanish. So land where you think the middle is and use the buggy's wave scanner to find the source.*




It helps to zoom out your scanners to give you more scan range. And then tighten the range as you approach the blue area.

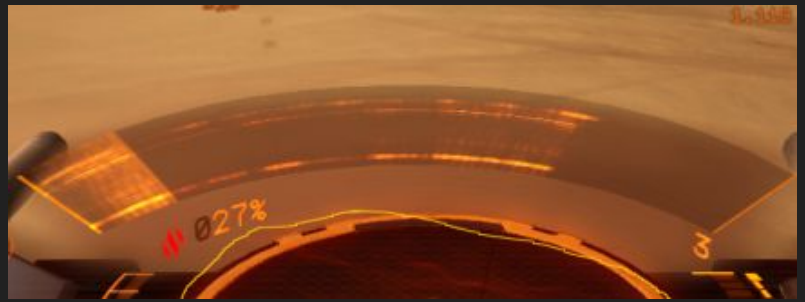


# Reading the wave scanner-1

*To find rocks, geological features or tech on the surface with the buggy, it is useful to know how to read the wave scanner. It's the half-circle that sits above your sensor screen.*

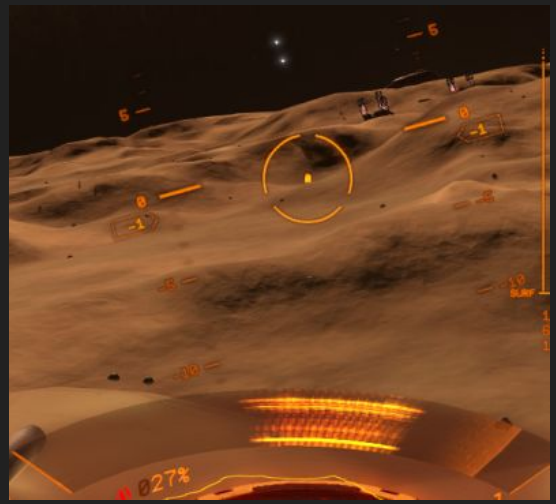
*Depending if it detects materials, technology or even your own ship, it gives audio and visual cues. Much like a geiger counter. Horizontal lines appear when 'something' is detected. Broad when far away, tighter when close.*

When something is far, the horizontal lines are broad.




Unfortunately, it won't detect biological features.

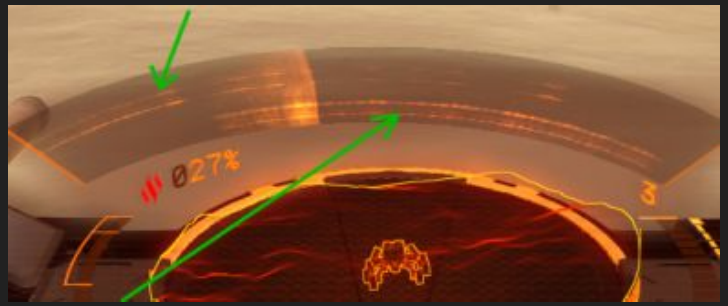
The signal gets much tighter as you approach



# Reading the wave scanner-2

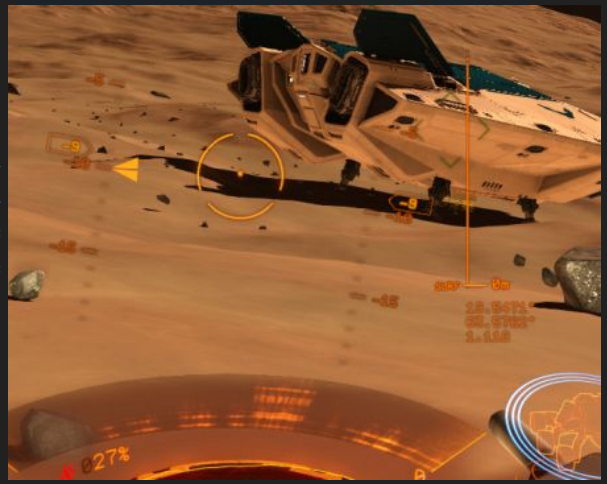
*It is possible to 'read between the lines' on the wave scanner to guess what you're going to find, more or less. For example, high lines represent drones, crashed ships and installations, technology! Lower lines are material sources, outcroppings or meteorites. Sources of minerals. You can even find a mix of both for mining installations.*

These high bands turned out to be a crashed ship



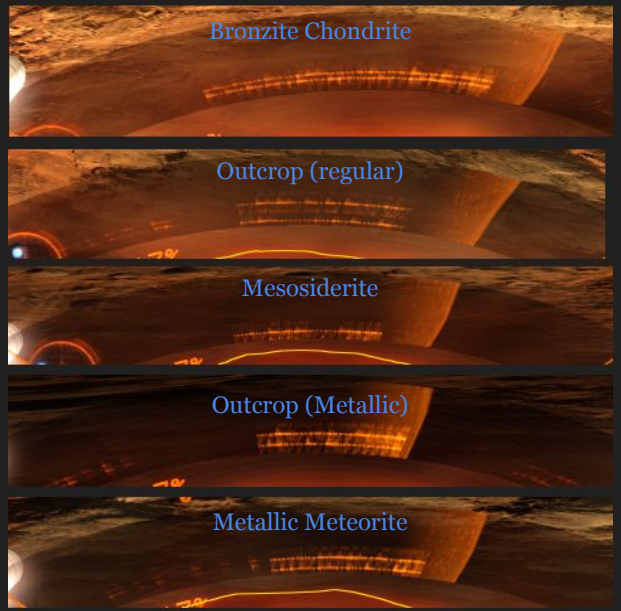

The lower bands were a source of materials

Your ship will give out a signal too. You can 'send away' your ship through the role menu to clear up the wave scanner.



# Reading the wave scanner-3

*This is how the wave scanner correlate to different material sources. Bronzite chondrite and regular outcrops contain more common materials, usually. Mesosiderite, metallic outcrops and metallic meteorites contain rarer materials. 'Other' results are higher on the scanner, can be crashed ships, probes or the like. They aren't natural.*




*Keep in mind 'outcrops' come in two flavors despite identical names. You can tell them apart from the slightly different lines in the scanner, and how they sound.*

*If it 'sounds' like a scratchy geiger, it's a regular one, common materials.*

*If you find an outcrop that sounds 'musical', it may contain rarer materials. We nickname those 'metallic outcrops'.*

# Mining for materials

*Now that you know how to read the wave scanner, start by going towards a material source. It's just a matter of heading towards those lower bands, until a white target appears when you are close enough. They come in the following flavors: outcrops, bronzite chondrites, metallic asteroids and mesosiderite.*

*Shoot the rock, and some chunks will fly out. Target them, open your cargo hatch and roll over to pick them up. And that's one way to gather materials for synthesis or engineers.*


Boom! And the chondrite's gone!

# Geological features

*Fumaroles, geysers, brain trees... Planetary features aplenty await the intrepid explorer. Once you found some features thanks to your DSS or wave scanner, here's a few things you can do once landed...*


*Fragments, crystals and more can be shot to obtain various engineering raw materials.*


*Rarity of the materials found is related to the type of... rock?*

You never know when geology knowledge might come in handy.

# The composition scanner

*The codex lists discoveries, both yours and other commanders. In order to add to the codex, try pointing on something particular and use your short range composition scanner (Remember to switch to analysis mode).*

*Point to a feature, fire the short range comp scanner...*

*And it adds to the codex!*

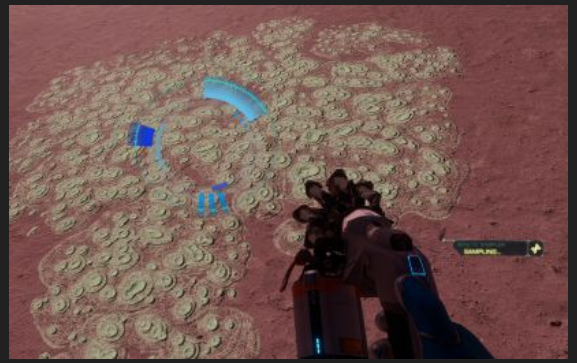

(Fun fact: you can use the composition scanner directly from the ship.)


For science!

# Xenobiology in Odyssey

*Want to do more science in Odyssey? Make sure you bought an Artemis suit, find a planet with biological features (atmospheric landable worlds usually have a few) and after mapping it, land in a blue zone…*

*The Artemis suit's special tool is a DNA sampler, Use it on biological lifeforms, three of the same type will give you a full sample you can sell at Vista genomics.*





*The secondary fire on the sampler sends a wave that highlights nearby bioforms. Blue ones are too close to a previous sample, green ones can be collected.*

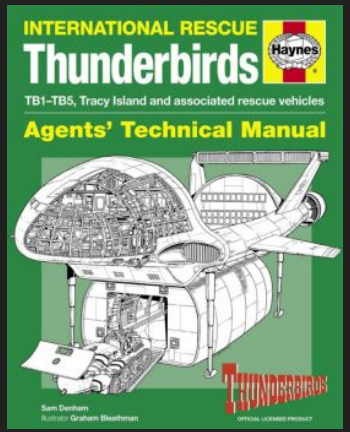
# Odyssey settlements

*Odyssey settlements you can land at, as long as your ship is small enough. Or you could land next to the settlement. Missions found in stations concourses will lead there. The simplest ones are pickups. The most complicated ones are heists, for which you will need to master the art of copying security levels and disabling alarms.*

“The moments of study are insurance of success.”
Dune - Duncan Idaho’s wisdom

# Time to take off

*Landed in the middle of nowhere and time to return to space? That's easy as long as your Asp didn't land with a hill right under the hangar, mine always does that, silly AI.*




*First, recall your ship if necessary, and then roll your SRV right under the hangar's flashy lines.*


*An indicator will light up on the bottom right of your HUD when you're in the right spot. Then you use your 'role' menu (bottom screen, #3 for PC) to board your ship.*

*And then you are go for launch.*

# High G takeoff

*The takeoff can be a bit of a trick on a high G world since some actions can cause a sudden loss of altitude. Here is a safe takeoff technique. Avoid boosting as that can cause bad surprises.*

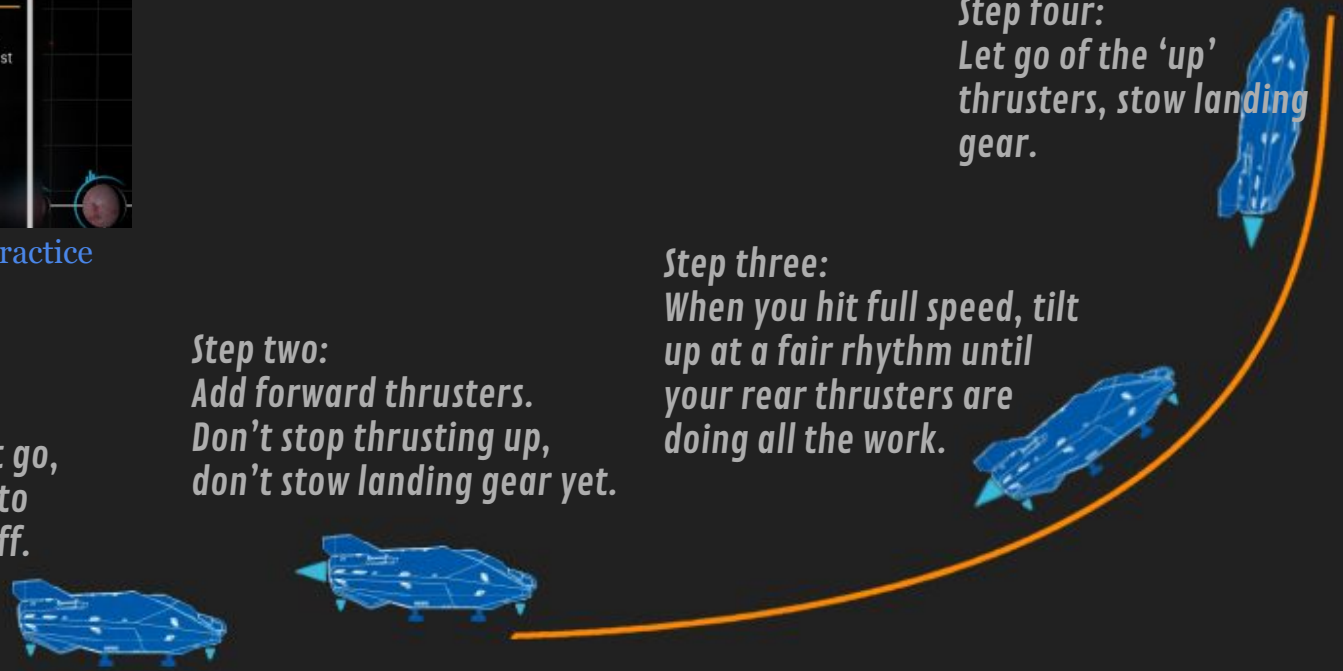

Achenar 3 is good practice at 6.73G

*Step one:*
*Thrust up, don't let go, it takes a moment to successfully take off.*

*Step two:*
*Add forward thrusters. Don't stop thrusting up, don't stow landing gear yet.*

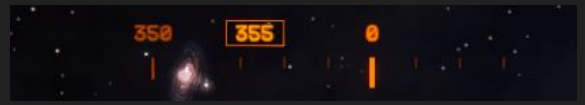
*Step three:*
*When you hit full speed, tilt up at a fair rhythm until your rear thrusters are doing all the work.*

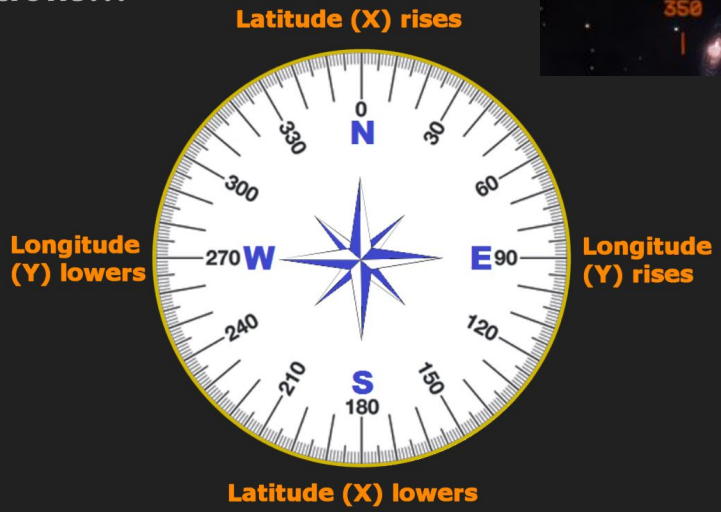
*Step four:*
*Let go of the 'up' thrusters, stow landing gear.*

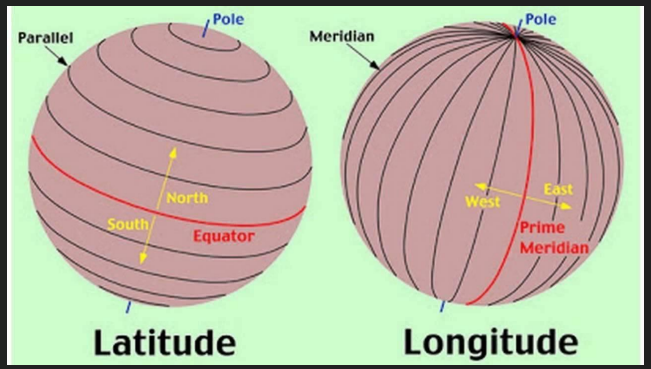


# Bonus course: Coordinates and heading

*The ship's heading at the top of the HUD only gives degrees, not 'north, south, east, west' so I've made myself a little infographic to help find what heading to use in certain situations...*




*If you were around 34 by -110 and wanted to reach -38 by -128. You'd have to go 'south' a good while, and a bit west. So heading 200 or so.*

Latitude, our first number, is a north-south indicator that goes from -90 to 90 degrees.

Longitude, the second, is an east-west indicator that goes from -180 to 180

# Thank you for reading

*As a parting shot, here's a few links to a variety of exploration and astronomy resources.*

*Dognosh's excellent SRV guide: https://forums.frontier.co.uk/showthread.php?t=207138*
*The Distant Worlds prospector's guide to the galaxy: https://forums.frontier.co.uk/showthread.php?t=228645*

*Elite Forums exploration go-to: https://forums.frontier.co.uk/forumdisplay.php?f=117 (thank you, captain Obvious)*
*Galactic mapping community project: https://forums.frontier.co.uk/showthread.php?t=116450*
*Map of local nebulae: https://i.imgur.com/hUna3LU.jpg*
*The wiki list of astronomy-related lists: https://en.wikipedia.org/wiki/Category:Astronomy-related_lists*
*Wikis about 'star clusters': Open Clusters and Globular Clusters.*
*Wiki list of star catalogues: https://en.wikipedia.org/wiki/List_of_astronomical_catalogues*
*A great site for the Messier catalogue: http://www.seasky.org/astronomy/astronomy-messier.html*

*Elite Dangerous Community Developers: https://edcd.github.io/*
*Some funny Elite music: The Great Explorer and Hotel Dalgarmo. (That guy did other good stuff too)*
*For music I also recommend a search of 'Space age pop' on http://www.shoutcast.com*

*Elite forums, the various popular guides: The popular guide to powerplay, The popular guide to exploration, The popular guide to planetary landings, The popular guide to mining, The hitchhiker's guide to the frontier, The popular guide to guardian xenoarchaology*

This guide was brought to you by: *Lance 'Spacecat' D.*