The popular guide to planetary landings

"That's no moon..."

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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.

It is also risky: My ship left a crater on a high-G world. I improved my landing skills but I still had a lot of dents on my 'Sundiver' type-6.

This document's intent is to offer advice about planetary landings, explain how to use the SRVs and make the experience more pleasant for the commanders that follow.

Setting up your ship for landing

Besides having the Horizon update, you will need a 'planetary approach suite' (which is usually setup by default) on your ship to land on planets. This will allow you to visit settlements with landing pads at least.

To roll around in the SRV (the buggy) you will also need to setup a 'planetary vehicle hangar'. These come in class 2, 4 (holds two bays) and 6 (four bays). Once you get one, don't forget to fill the bays.

Considering how rough some landings are, a shield generator is highly recommended. Okay 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.

Here are some sample ships, setup for both long-range exploration and landing. Not too suitable for usage inside the bubble, you'd need more shields and defenses in inhabited space.

Type-6 explorer/lander
ASP explorer/lander
Anaconda explorer/lander

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 can do things a bit more chancey in a SRV, it's forgiving.

Navigating safely

Supercruising into a planet hurts!

For your ship to keep control of your speed and for you to avoid the 'loop of shame', there's a simple trick: 50% throttle at the right time means you'll have a safe approach speed.

No sense going -too- fast.

You can use full speed in supercruise for a time, but to know the right time to slow down, keep an eye on your "ETA". When it reaches 7-8 seconds, drop down to 50% throttle.

The timer should stay on 6 seconds quite a while and your speed will be under control.

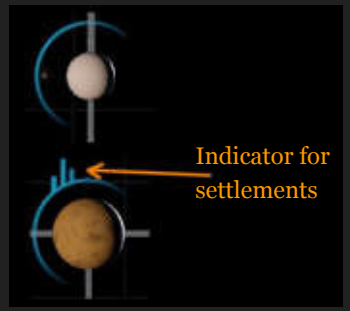
Then during the final planetary approach, try to keep the ETA at 7 seconds, but you'll have to keep adjusting your throttle.

This is the "ETA"

This is "Too Fast"

"Safe Approach Speed"

Where to go, where to land

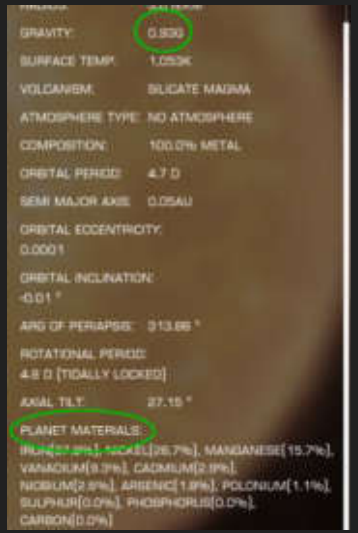


Look at the system maps, planets you can land at have a clear blue outline.
A mere system scan will inform you of this and give you the list of settlements in the third tab of the system map - you won't see them yet in your navigation HUD.
You also see little towers if there are settlements, not necessarily with landing pads

Scanning the planet ahead of time will reveal planetary data of import.

The Gees figure is good to know before trying to land somewhere. It's easy to land on bodies with a half G or less, 2 Gs and above is both risky and challenging.

The planet materials list will help you hunt down particular items you need for engineers or synthesis.



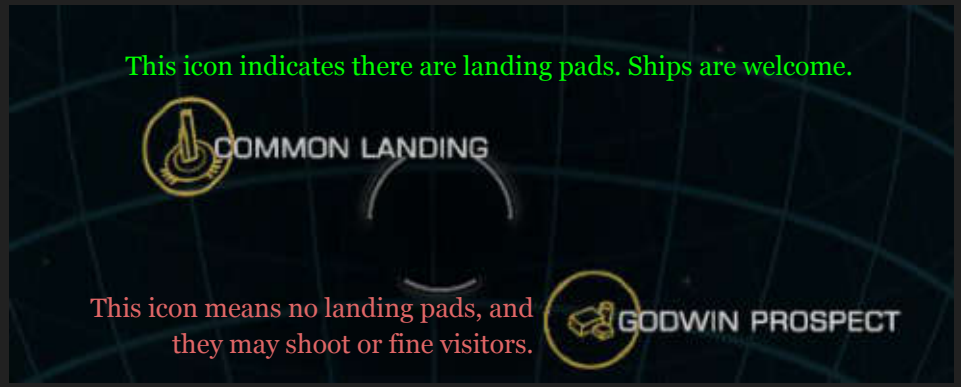
Planetary features

A good reason for using the DSS (Detailed Surface Scanner) is how one can find geological or biological features on approach. Practice those probes!

Further down the guide, I will say more about geological features and the short range composition scanner

Now you picked a planet...

You can land most anywhere on these planets, but settlements (with or without landing pads) are of particular interest. The icons indicate if the settlement has landing pads or not.



Settlements asides, you can land anywhere to look for materials, those are all over the place.

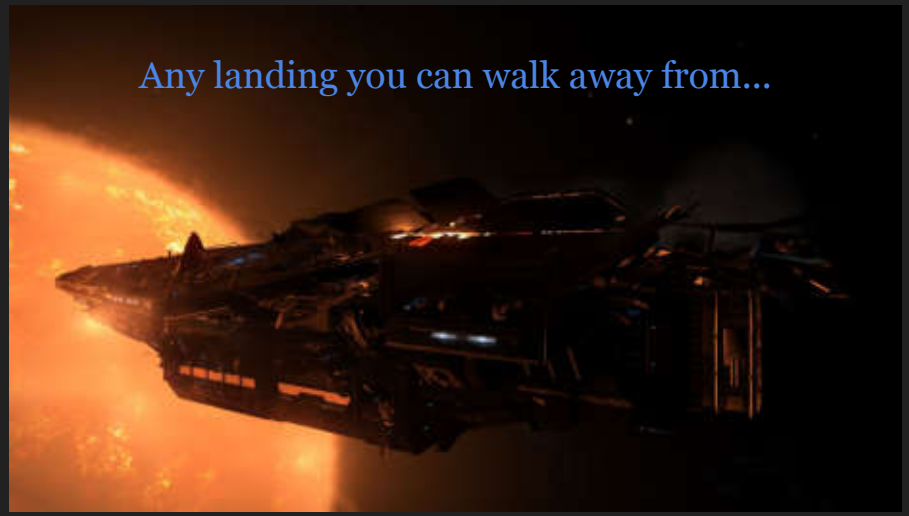
In addition, you can skim over the surface at an altitude of 1-10 km (2km is recommended) to look for 'points of interest'. We'll review that in more detail later.

Important warning! Some non-landing settlements consider themselves 'private property', and will throw fines, bounties or even anti-air fire at commanders that get too close, shoot their drones or fiddle around with their data towers.

For safety's sake, land 1-2 km away from the non-landing settlements.

Respect gravity, it's the law!

*For your safety **I STRONGLY INSIST** you keep an eye on the gravity of a planet before landing! And practice. Landing is tricky, landing on high G worlds 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.*



The Gees are indicated 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 managed to land and take off 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 directly as you will fail your 'glide' (explained in the next page). Trust me for now.

The goal is to hit the 'drop' altitude at less than 9km/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)

Cruisin' in orbital...

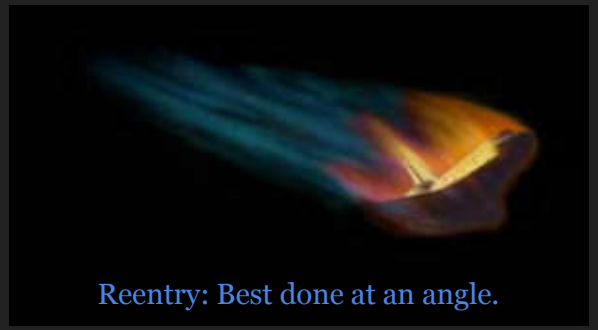
The planetary approach - 2

When you hit the 'DRP' altitude (roughly 30-40 km altitude, depending on the planet) your ship will kick out of orbital cruise and enter suborbital flight. Then one of two things can happen:

1-If you come in crazy fast, or at an angle too shallow or too steep: You may lose control much like getting kicked out of supercruise, and be at 40 km altitude with normal space ship speed, that's a long way to go. I suggest you supercruise straight up and try a new approach, you'll save time.

2-If you come in at a proper angle (-5 to -60 degrees, very forgiving): you will enter 'Orbital glide', which gives you a fast, controlled approach to your landing spot. And at 6-8 km altitude your ship will kick back to normal speed safely for your final approach.

Orbital glide is how you want to approach, hence my advice to make your orbital approach from around -30 to -50 degrees.



Reentry: Best done at an angle.

The planetary approach - 3

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 up 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.

Surface tutorial in three steps

Now that you know how to approach the surface. There's a lot to cover about driving around the planet and the actual touchdown so I'll present the information in the form of a three-part tutorial, with a bonus course:

Part one will be a landing at a settlement with landing pads.

Part two will be a landing on the ground near a small settlement.

Part three is a landing near a Point of Interest (POI) and speaks of geological features.

The bonus goes beyond these tutorials, focusing on planetary coordinates.

Part 1: Landing in a settlement

Landing in a settlement with landing pads is a lot like landing in a space station.

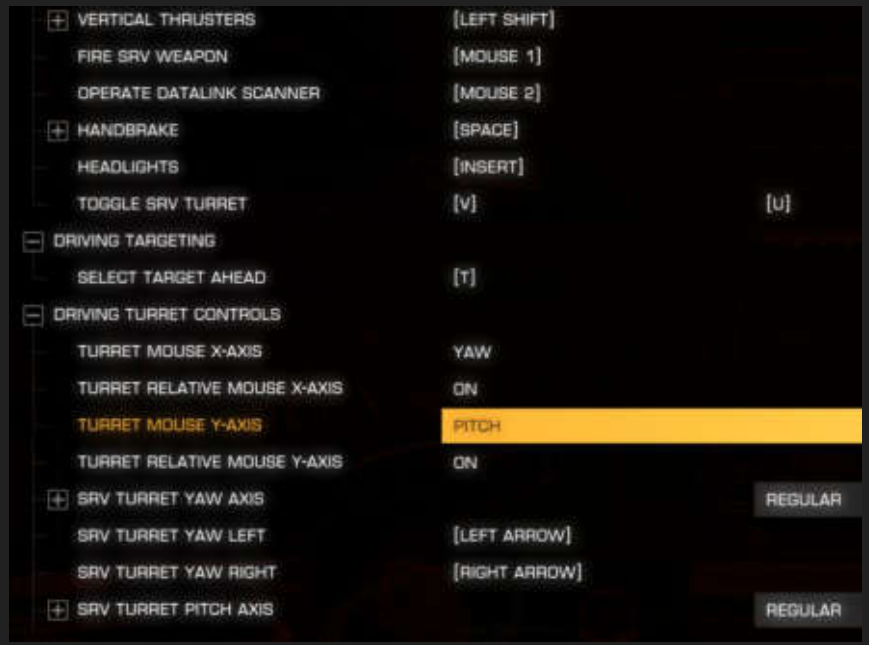
You ask for landing permission in the comms from kilometers away, you check which one is your pad. You get fined if you approach the wrong one, and if you're using a docking computer you get mood music.

I've had a good experience with a docking computer on ground stations, for planets of up to 1.3 Gs. Haven't tested with higher gravity worlds. Still, my friendly advice remains thus: Don't trust the computer so much you go AFK, and be ready to turn it off and go manual.

Other advice: On a higher-G planet, don't roll and tilt up your ship to turn, you'll lose altitude fast. Yaw is slow but safe.

The SRV driving controls-1

The first time I came out in the SRV, I was surprised to find no default controls. And it took me a while to setup properly. To save you some trouble, here is my mouse-and-keyboard setup. It's not perfect but it works.



The SRV driving controls-2

I use WASD for direction and speed. Space for breaking. Left shift for jump jets (little finger). V for switching in and out of the turret, Q and E for the powerful roll thrusters. Mouse can adjust the nose a little in mid-air.

Bring out the buggy!

Time to test your controls. The 'role panel' is used to open up a panel to launch (or redock) SRVs, transfer cargo, send away or recall your ship, etc…

Important miscellaneous keys to remember are the 'data link scanner' which will be explained later. The jump jets, and the key for 'toggle SRV turret', it's how to get in and out of turret mode.

Also take your time, sit back and watch the stars...

Take the time to adjust and test your controls, 'drive assist off' lets you drive in arcade-car-game style, and 'drive assist on' is useful for driving on tough broken ground or ice, it helps stability in straights.

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 reenter your ship and go back out.

Apparently there's a repair rig in the ship's vehicle hangar.
Very handy

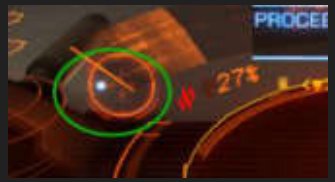
Ammo, Hull, fuel. Three things to watch!

Excuse me, Where is dock 256?

When it's time to get back to your ship in a settlement, you first go to your contacts and ask for a docking permission… And finding the hangar is not as obvious as when you're flying, There's no big neon signs to light your way.

After requesting docking in your SRV, look at the direction indicator on your scanner, it will be the most helpful thing to help you find your ship's dock in the settlement.

Then It's just a matter of entering the garage-like opening at ground level.



The helpful direction indicator

Home is where the garage is…

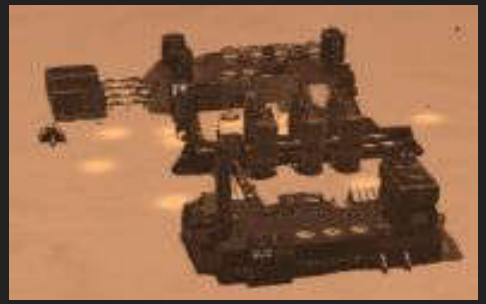
Part 2: Landing near a small settlement

Pick a small settlement without landing pads, maybe one you have a mission at.

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: Maybe you're scouting enemy installations, causing trouble in anarchy systems or 'enemy territory'. Maybe you're a spy, driving a cool gadget car!

Settlements come in all shapes and sizes



Landing on the ground: Touchdown!

You're going slow and steady, stay 2km or so away from the base, get close to the ground and 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. Or you can take a chance and touchdown anyway, sometimes you -can- land on a mild slope.

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

Forbidden zones and drones

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'.

Settlement static 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.

Settlement mobile defenses

The drones defending settlements come have a certain variety. And the higher the security level, the more drones there should be on defense as well as nastier types.

Sentries are a common lightly shielded type. Stingers can fire missiles. Guardians have heavier shields but all these are pretty fragile and not a major threat except in numbers.

The most dangerous by far is the 'Goliath' you might see at high security installations. Very tough, heavily armed, heavily shielded, it has missiles launcher and is aggressive enough to run you off while you're flying a ship!

If you try and tackle one, expect to use multiple synthesis to reload and repair your SRV during the fight, and use obstacles as cover for hit and run tactics.

There might be ships flying around, or even landed on the settlement. If you cause trouble in the SRV they -will- take off and strafe you.

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.

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 are identical to bounties, but rumor has it they give rank in exploration.

Skimmer hunting missions

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.

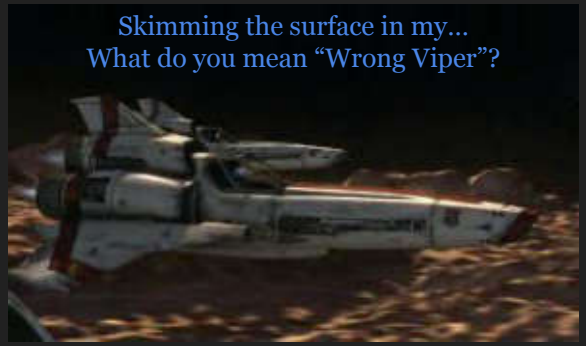
I explain how to look for POIs in the next few pages...

Not quite the drones we're hunting.

Part 3: landing near a POI

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) till 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 stuff' on the surface with the buggy, you must learn 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.

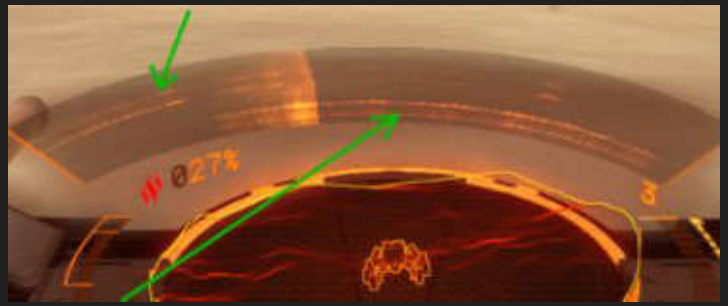
When something is far, the horizontal lines are broad.

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 seem to represent drones, crashed ships and installations. So, technology! Lower lines are material sources, outcroppings or meteorites. So, minerals. You can even find a mix of both for mining installations

These high bands turned out to be a crashed ship

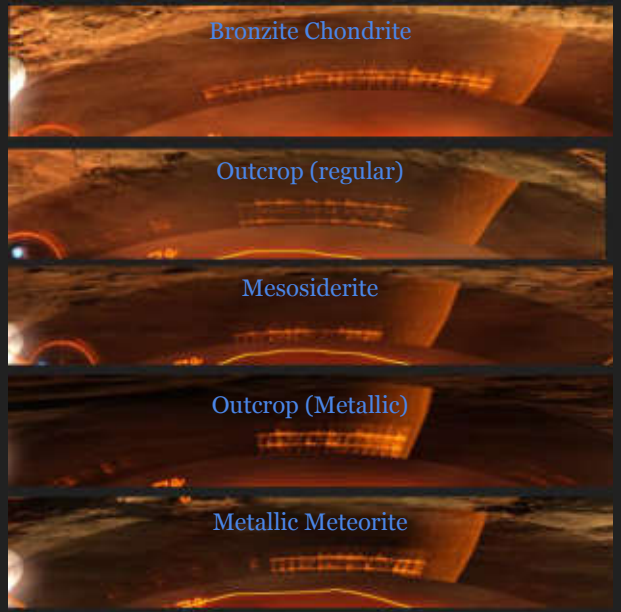


The lower bands were a source of materials

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.



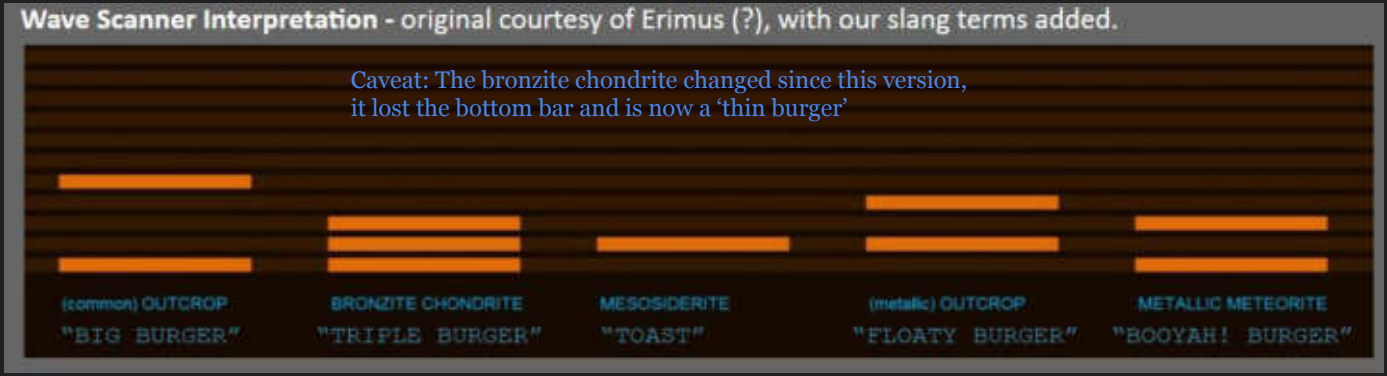
Keep in mind 'outcrops' come in two flavors despite identical names. You can tell them apart from the slightly different lines in the scanner, and how they sound.

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'.

Reading the wave scanner-4

To tell apart Bronzite, metallic outcrops and metallic meteorites apart, I recommend this amusing and easy-to-remember method, courtesy of a [care package] designed by Radio Sidewinder and cmdr Erimus:



Bronzite Chondrite may actually look like a thin burger rather than a triple, the regular outcrop is rather tall. More desirable metallic outcrops and meteorites look like… regular burgers, the meteorite one is flat on the bottom of the scanner. So, "Go for toast and regular burgers".

Yet another method is to play with http://www.wavescanner.net/

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 how you gather materials for synthesis or engineers.

Boom! And the chondrite's gone!

Hitting the POI

Next, head for the 'higher' bands you can find on your wave scanner, until you find the actual source of the point of interest. This could be one of a variety of things, who knows what you'll find! But for this example, here's a crashed ship defended by drones that appeared the moment I touched the forbidden zone… You can see the red zone, two drones, the wreck and two canisters of cargo worth picking up (for a mission in my case).

You can tackle this situation with a scoop-and-run, or by shooting the drones.
It's up to you!

Experiment, explore and have fun, commander.

Geological/biological features-1

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

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.

Geological/biological features-2

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...

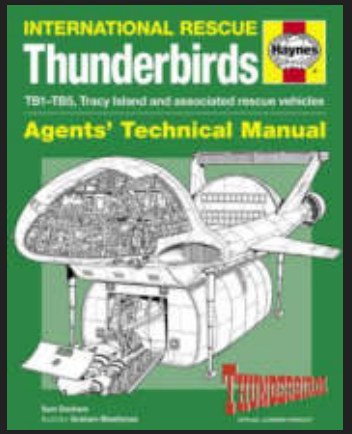
And it adds to the codex!

(Fun fact: you can do it directly from the ship.)

Bask.

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.



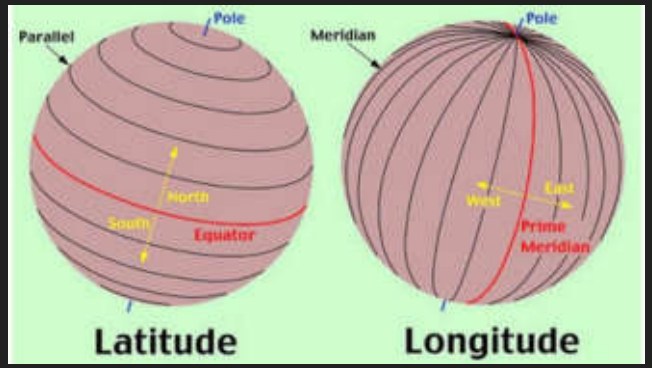
First, recall your ship if necessary, and then roll your SRV right under the hangar's flashy lines.

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 to reenter your ship. And then you are GO!

Bonus course: Coordinates

On quite a number of planets there are places of interest that you can visit (Crashed ships, alien barnacles, ancient ruins…), They can be found easily enough with the DSS, but what if you've been given latitude and longitude to find them?
Successfully using coordinates means a bit of work with the ship's heading indicator. For this bonus course we'll use the site of ancient ruins as an example, located in…
Synuefe XR-H D11-102 1 B** (second moon of the first planet) **at coordinates -31.7 by -128.9

First, let's review our geography: Latitude and Longitude work like this…



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

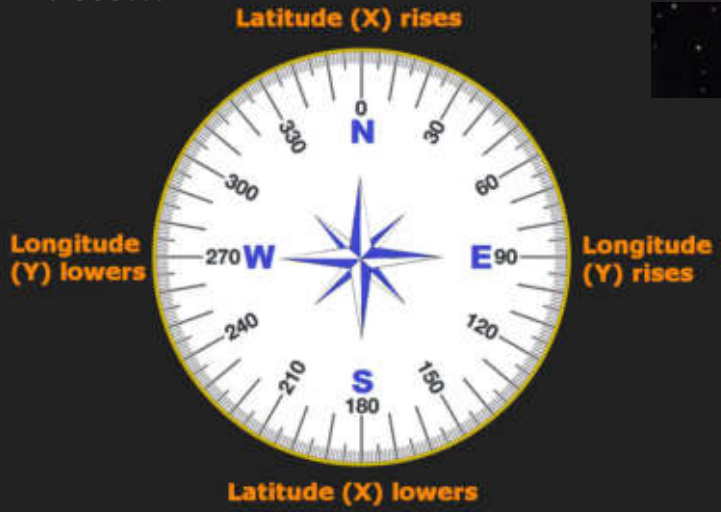
Longitude, the second, is an east-west indicator that goes from -180 to 180

Avoid this fate, use a compass!

Mnemonic trick: Set a map on the wall and north has more 'altitude', so it's 'latitude'.

Ship's heading vs coordinates

Now, the ship's heading only gives degrees, not 'north, south, east, west' so I've made myself a little infographic to help find what heading to use in approaching certain coordinates...



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.

Spoiler: The ancient ruins are 'near' a large impact crater in the southern hemisphere.

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 Galaxy Online book of records: http://www.elitegalaxyonline.com/news/
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.*