# KSP – Prospecting 101

Introduction:

This tutorial will cover using stock parts and stock means to scan for stock Ore. There are three main parts for scanning and this tutorial will cover all 3 devices to scan for ore concentration levels.

Prospecting 102, in the future, will cover using ScanSat, USI, and other resource functions with mods.

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## Syllabus – Kinda!

## Covering how to find and locate Ore Deposits
### What we will cover!

1. Use of M700 Survey Scanner
2. Use of M4435 Narrow Band Scanner
3. Use of Surface Scanning Module
4. Orbital and Ground use of the M4435 NBS
5. Ground use of the Surface Scanning Module
6. Tricks to make the whole process easier!
7. Frequently Asked Questions

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## Introducing the M700 Survey Scanner:

The M700 Survey Scanner:
Gathers resource data from a polar orbit.
Default ranges:
Min. Altitude: 25,000m
    Unless body radius / 10 is larger
Max. Altitude: 1,500,000m
    Unless body radius * 5 is smaller

Example: Kerbin's Moon Minmus – Radius 60km
60,000 / 10 = 6,000m so Minimum stays 25,000m
60,000 * 5 = 300,000m so new max is 300,000m

Your orbital Inclination must be above 80º
    Very close to true Polar Orbit.

You must have an antenna to transmit the data to be valid.

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## Tricks to use M700

Best Orbital Approach:
    Try to encounter your target from top,
    Or bottom so you are already starting
    From a polar orbit basis.

Direction of orbit does not matter, as long as it is polar.
    Your orbital Inclination must be above 80º
When scanning Kerbin be sure to start into a polar orbit.
Shifting from an equatorial orbit to polar orbit can be
VERY costly in Delta-V!

Know your min and max altitude in advance -
    Check the target's radius!
Scanner is relatively light at 0.2t.
Remember you can add more science to the rocket to
maximize your return on investment of the probe.

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## After Scanning with M700

When you finish your scan with the M700,
The body you are orbiting will now have data!
Select the body in the map window and click
On the ⊙ button. This will let you see resource
Distribution. If you do not see this button likely
The body is not your focus in map mode.

Note the Cutoff -/+ and % at the bottom.
Use this to limit the view to higher Ore Levels

Focus on the higher values.
The color and style buttons change how the ore
concentration is displayed on the surface of the body.

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## Using the M4435 NBS

After you have the M700 data, you will see rough concentration levels of Ore around the body you scanned.

These values are not numerical, but graphical, and only a rough approximation. To get average biome values you will need to use the M4435 Narrow-Band Scanner. This scanner can be used both from orbit and on the ground.

**WARNING:** the M4435 Rotates and has a collision mesh that rotates with it so you have to be careful about the placement on a rocket.

The M4435 has a max altitude of 500k (500,000m)
It can be used from the surface up to this altitude.
It does not need to be in a polar orbit, but only shows what is directly under it with an +/- 4° lat/long variance.

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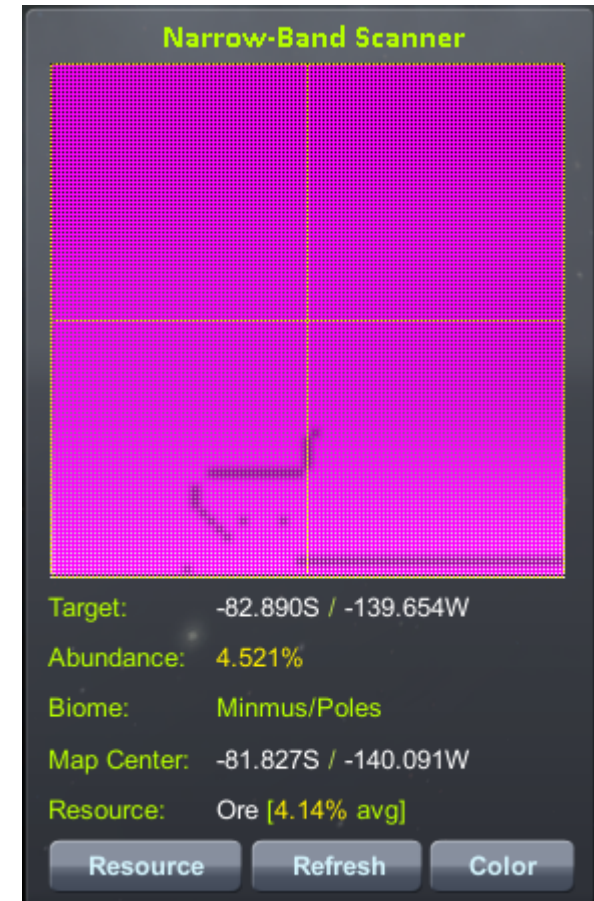
## Limitations of the M4435

The M4435 only displays the map directly under the probe.

The GUI will show you the longitude and latitude of your location as well as the biomes directly around it. It has no zoom function.

For example: M700 says the body has 4.1%, while M4435 says the poles have 4.521%.

The M4435 display, when moused over, will show biomes and show the average concentration for each biome in range of the snapshot in the GUI.

Note that the GUI is a static image. You must hit refresh to update your location and data.

**Narrow-Band Scanner**

| | |
|---|---|
| Target: | -82.890S / -139.654W |
| Abundance: | 4.521% |
| Biome: | Minmus/Poles |
| Map Center: | -81.827S / -140.091W |
| Resource: | Ore [4.14% avg] |

| Resource | Refresh | Color |

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## Surface Scanning Module

The Surface Scanning Module has two functions:

1. It will display the ore value for the exact spot under it, up to an altitude of 1000m. This value changes as you move to give the real time value of that site.

2. After you 'scan' a biome it will make the M4435 GUI interface more accurate for that biome. It no longer will show the average value for the biome but will show the exact value in the area around the scanner in that biome. This can allow you to find a 'hot spot' of ore.

Example: My Minmus had an average of 4.1% ore with the M700. The biome of the great flats had an average of 6.2% with the M4435. After using the surface scanning module I was able to find a hot spot of 8.6% Ore with the M4435 GUI.

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## Tips & Tricks

1. Use the M700 first as the other parts won't work until you have the M700 orbital scan.

2. When scouting out a hot spot use the map view by pushing the cutoff % as high as you can before you see no sources. Then target the area that still shows.

3. When landing a rover to scout a spot out try to include both the M4435 & the Surface Scanning Module at the same time. This GUI from the M4435 helps a lot.

4. If you are worried about a biome's values try putting an M4435 on the same satellite as the M700, and then when directly over biomes you think are promising pull up the M4435 GUI to see the average value of that biome.

5. The difference between 7.5 % and 8 % may not be worth a lot of hassle when placing a drill, the variation will add up but in the long run the time warping will mean it shouldn't have much overall effect.

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## FAQ

Q. What is the stock ore distribution by default?
A. The ore has 100% chance in each biome and ranges from 1% to 15%. There are variations that mean it can be below 1% and potentially to exceed 15% (Although I have not seen this personally). Some locations are set to 0% by default, such as the Sun, Jool, and some water spots on Laythe.

Q. When Customizing a game at the start what does the Resource Abundance Value do?
A. This changes the percent chance of Ore to be in a specific biome. This can allow the 100% chance to now be lower than 100%. The increase to 120% will only affect resources that are less than 100% chance per biome. Those resources will be covered in Prospecting 102.

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## FAQ

Q. Do resources run out?
A. Not on moons or planets at this time. There is apparently code in place to allow this but it is not 'switched on' by any mods that I am aware of. Asteroids can be depleted.

Q. What do you do to prospect Asteroids?
A. You can not use an M700 or even an M4435 on an Asteroid. In fact you don't need to do much on an asteroid but claw it. This should give you the value of Ore on the asteroid and the mass of it.

Q. When prospecting ore if time is not a factor, and there is 100% distribution of ore by default why worry about the percentage?
A. If time is not a factor at all, there is still the fact that the Drill-o-matic Jr. requires 2.5% density of ore to function.

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## The End!

These slides were created by The Read Panda.
That's pronounced red, as in the past tense! It is a play on words and a homophone.
A homophone is when two words sound alike but are spelled differently and mean
Different things!

My focus is on educational things that are entertaining. Sometimes I focus more on
One or the other. These slides are an effort to help teach others about some elements
Of Kerbal Space Program and the mods used with it.

You can find me several ways:

Http://Twitch.tv/thereadpanda
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