PROJECT SHATTERSTAR

VOLUME 1 OF GUIDE TO THE **ONI**-VERSE

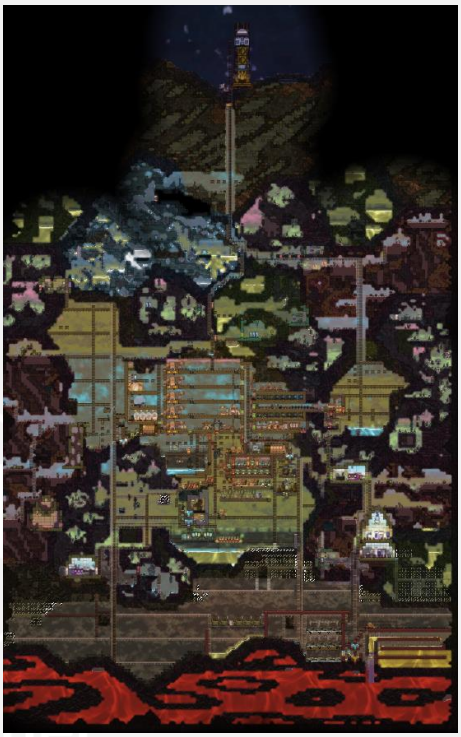
OXYGEN NOT INCLUDED

SPACED OUT!

By- the stormfather

CHAPTER 7 : Petroleum, Plastic and Oxylite

Cycle 175 (Main Planet)



Cycle 215 (Main Planet)

Never before have I set up petroleum this early in a game. With that, I can declare an official shift from the 'early game' to the 'mid game'. We also look at how digging the wrong tile could heat your base to death. Lets take a look at the highlights.

Highlights :

- We get the petroleum boiler up and running
- We try to make a plastic setup
- We set up an oxylite refinery
- We begin to make a rocket

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PROJECT SHATTERSTAR

CH 7: Petroleum, Plastic and Oxylite

Disclaimer-

Oxygen Not Included is a sandbox game limited only by the player's imagination. I can assure you that no player (including me) has figured out the 'right' way to play the game…. No matter how many hours they may have put into the game.

That's because there is no right way. What you do depends on what you want to achieve. Some love building ridiculous and elaborate builds, while others are more efficient and practical. Both are perfectly acceptable ways to play. What matters is that you enjoy what you do.

The following document is a guide and not a gospel. Like every other player, I have my unique style of play. What I intend to do is to share my playstyle and start a conversation with the community. This document will take you through a real and typical game, showcasing my approach to things. The playthrough will not be perfect. But it will be enlightening and entertaining. I hope my readers will use this series to modify their own unique style rather than copy mine.

Feel free to skip, ignore or modify any of the recommendations given in the series.

All Game art has been taken from the game files and is the property of Klei (if that wasn't obvious enough). I've used them only to make the document more engaging.

While this guide is quite simple, It's not meant to spoon-feed you. You may have to do a bit of additional research if you are a new player, and I'm happy to answer any specific questions.

The easiest way to find me is on Reddit. My handle u/Storm-Father. Please feel free to drop me a message or tag me in a post.

The series will use the following mods. These are quality of life mods and do not affect core gameplay

- Wounded go to Med bed
- Per-planetoid materials
- Blueprints fixed
- Pliers fixed
- Bigger Building Menu
- No ‘Long Commutes’
- Suppress Notifications
- Geyser Calculated Average Output tooltip
- Critter Inventory
- Queue for Sinks
- FreeCamera
- MaterialColor
- Show industrial Machinery Tag

Game Coordinates – ‘SNDST-C-360860549-0’

The Starmap

Petra

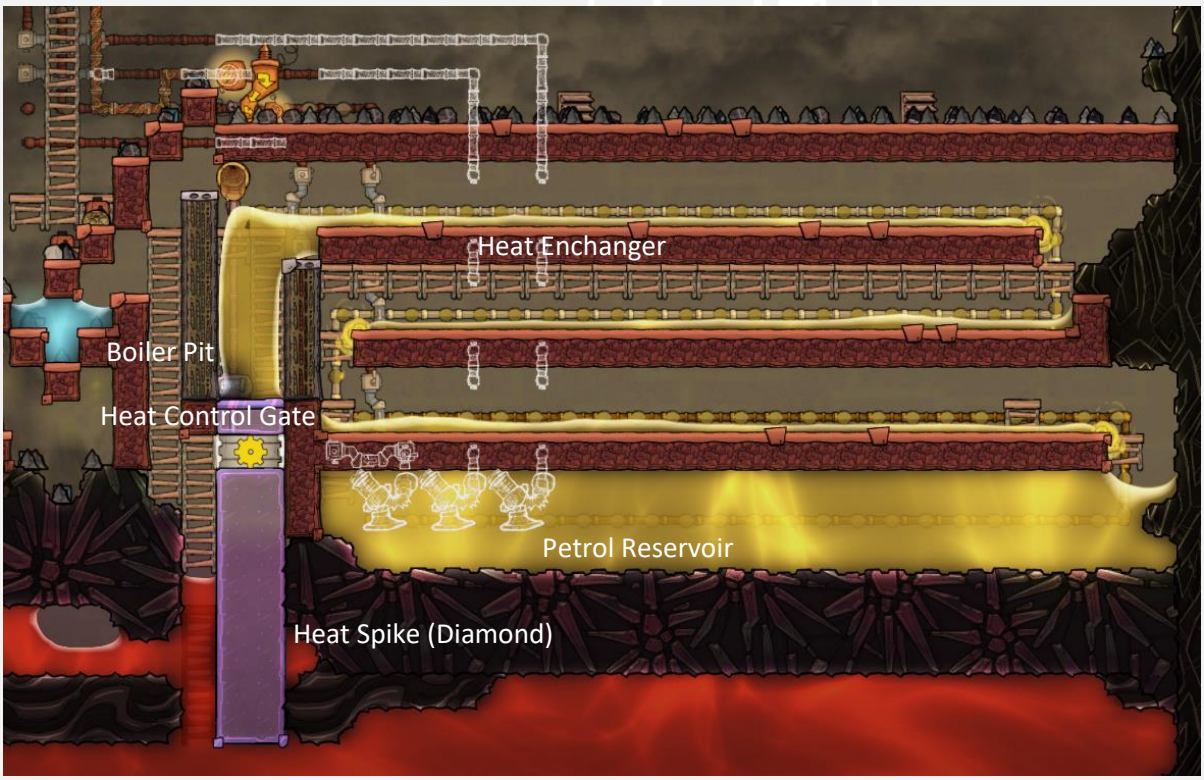
Neo Terra

1) The Industrial Age -

As we discussed in the last chapter, building a petroleum boiler isn't that hard in the grand scheme of things. All you need is some planning, a little bit of steel, some diamond, and a bunch of refined metal that is not lead.

This is not a 'how to build a boiler' tutorial. There are plenty of resources on that online. But if you do want my detailed take on it, let me know and I'll make an academy not included on it.

Recapping the concept of a petroleum boiler, it's basically a build that converts crude oil to petroleum using heat from high-temperature sources such as lava. Most of a typical boiler is a 'heat recovery mechanism', where the incoming crude oil is preheated to a higher temperature than the outgoing petroleum. This serves 2 purposes. Firstly, it reduces the amount of heat that needs to be supplied to get the crude oil to hit the threshold of 403 degrees. Secondly, it's to get the 403 degree petroleum down to a more manageable temperature, which won't overheat a steel liquid pump. This preheater allows 10kg/s of petroleum production at a negligible energy cost.



Now, the exact layout of the petroleum boiler is a personal preference, even though I have heard very strong opinions on the topic. Regardless, here are a few general pointers to keep in mind.

- The longer the heat spike, the less efficient it is for heat transfer. So try to keep the length of the spike on the shorter side.
- The more lava is in contact with the heat spike, the better the heating performance of the spike. This might come off as a bit of a no-brainer, but the more surface area is in contact with a hot object, the faster the spike will heat up. So don't have a heat spike just 'touch' the lava, and build it a bit deeper.
- A small petroleum pit can experience 'sputtering', where the conversion of crude oil to petroleum can sometimes cause crude oil to leap up into the heat exchanger in place of petroleum. This usually locks up the exchanger and needs a manual clean-up. On the flip side, a very large pit might just be a bit of a waste.
- A very short heat exchanger won't be effective, but a very long one will be a bit wasteful.
- The boiler HAS to be under vacuum. Any gas will ruin it.
- Don't make your radiant pipes out of lead. It will melt.

I use these guidelines and come up with the best compromise, which changes from map to map. On this particular map, my spike is moderately sized, my petrol pit is slightly on the larger side (this is more of a personal experiment), and my heat exchanger is moderate (about 60 tiles).

The airflow tiles are to prevent pressure damage, which works out fine because the entire boiler is under vacuum. I've also placed the airlock in a way that gives me access to the spike and the heat exchanger.

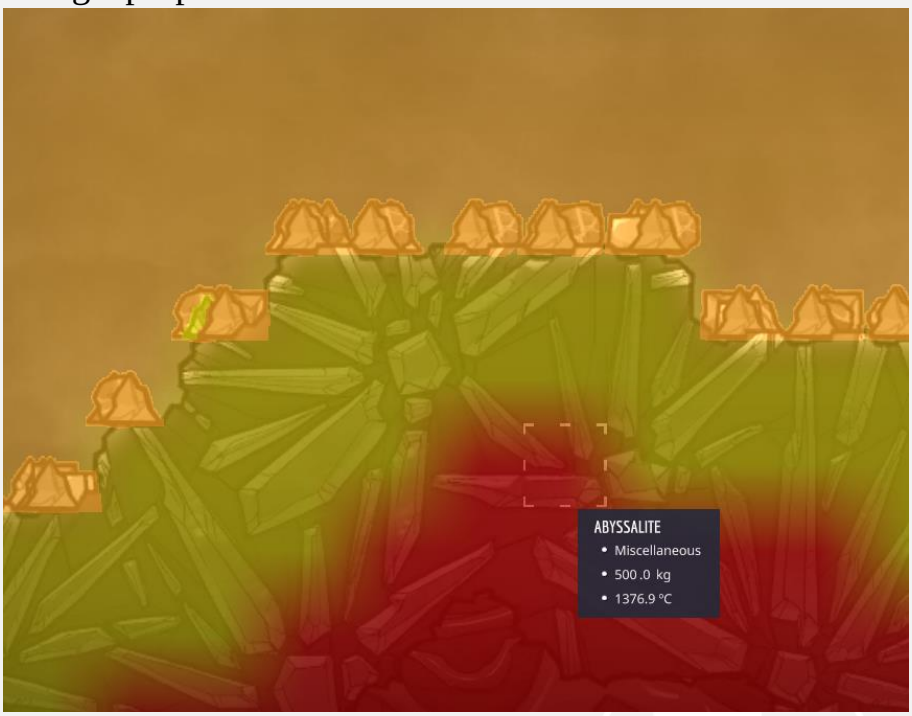
2) <u>Be careful of what you dig out -</u>

Digging can be dangerous. Digging out the wrong tile can leave your duplicant stranded, where they could die from lack of food or oxygen. Digging can also release germs, liquids or undesirable gases into the outer world.

But here I'm going to talk about an error that could cook your base if you're not careful. When you're digging around at the crust of your asteroid, with magma just under your feet, you can inadvertently release a lot of heat into your surroundings. When you're digging the abyssilite, I advise you to turn on the temperature filter first.

When you do, you'll notice that many abyssalite blocks are hundreds of degrees in temperature. These blocks, if exposed to the atmosphere, will slowly release their heat into the atmosphere. One exposed block can break builds and overheat buildings. Several blocks could potentially overheat your entire base. And this is just by exposing

the hot blocks. Just imagine what could happen if you dig into the magma itself, without using a proper airlock.



Never Expose these hot tiles to the open environment.

If you ever expose a hot block, cover it back up immediately with an insulated tile. The heat plug isn't perfect, but it's more than good enough to be sustainable. I too exposed a hot block while making my boiler, but I'm confident that the situation is handled.

3) Boiler Startup –

Starting a boiler can be a tricky business. I recommend you set the rest of your base in order and focus on just the boiler till it's running smooth and stable. I also recommend you run the boiler continuously. If you're short on oil or are not consuming enough petroleum, you can consider restricting the flow rate into the boiler using a valve. You can also turn the flow on and off, but I would recommend that you pay attention to the boiler whenever you do restart it.

Regardless, starting up a brand new boiler is the hardest startup. If you're a new player doing this for the first time, I highly recommend you save your game, so that you can go back to it in case things go horribly wrong. Yes, savescumming might be dishonourable, and I'm not asking you to restart at the first sign of trouble…. But it's an acceptable last resort when you're still learning the ropes. Once you're a bit more experienced, you'll be better equipped to handle your mistakes in real-time (or more ideally, avoid them altogether).

Crude oil enters the system at about 80 degrees. It has to be heated up to 403 degrees for it to turn to petroleum. This requires a lot of energy, and this reaction cannot be sustained at 10 Kg/s during startup. You can either turn the supply on and off during startup, or you can use a valve to have a reduced flow of crude in the system. I prefer turning the supply on and off.

Initially, manipulate the sensor to make sure the door is open before the crude oil hits the pit for the first time. This is the most important bit. The diamond at the bottom of the pit should be cold when the crude oil hits it. If it's too hot, the crude could flash into sour gas, which could be a disaster.

Once a sufficient amount of crude oil has been collected, flip the sensor to close the door if the temperature is below 430 degrees and shut off the supply of fresh crude. Wait for all the liquid to turn into petroleum and then turn on the supply again until about 500 Kg of crude has collected in the tile. Repeat this step again and again till the petroleum builts up to the top of the tank and starts spilling over the lip and into the heat exchanger.

At this point, you can change the temperature threshold to 403 degrees and turn on a continuous crude supply. The extra heat in the petroleum pit should be enough to sustain the reaction till the heat exchanger is fully up and ready. If you see any buildup of crude in the pit greater than 500 Kg, shut off the crude supply for some time.

Once the petroleum passes through the entire heat exchanger and starts dripping into the reservoir, the boiler is fully sustainable and will go on forever. Just make sure to remove petroleum from the boiler at the same rate that you pump crude into it. I usually use hydro sensors and multiple pumps to ensure petroleum doesn't overflow from the reservoir into the heat exchanger.

4) Plastic and Power –

Now that we have a steady flow of petroleum running, we have to figure out what to do with it. Usually, I make my boiler at a stage of the game when I have enough steel to build a large bank of plastic presses (which both consume petroleum and require petroleum to produce the electricity to run them). But I think I've whined enough about the lack of steel in this playthrough, so you know I can't make a proper plastic build. I tried building a bank out of gold amalgam but looks like the atmospheric gas is too thin to dissipate the heat properly. Note that I have disabled auto repair for all the buildings (as I discussed in the previous chapter).

I had 2 options. I could either create a more elaborate cooling solution with radiant pipes and such, or I could just shut off my petroleum boiler once I had a sufficient buildup of stock. I have chosen option 2 for now.

I cannot create a proper steam room without steel. And because I don't have access to an iron volcano, my steel is limited.

I disabled autorepair on the presses so that I didn't waste time and resources constantly repaining them. For now 4 presses continue to run well, and I'm fine with that for now as I don't need much plastic at the moment.

Natural gas and Petroleum are now the primary sources of power for the base, with coal being a backup. If everything goes according to plan, coal will never be used for power on this planet again.

5) Home improvements -

There have been several smaller changes around the base that I would like to go over

- We rebuilt the Rodriguez a little bit. Turns out I built the electrolyzers with copper ore instead of gold amalgam (as I had planned and was supposed to), meaning that they had begun to break under the high temperature. Speaking of temperature, I found that the regular pipes were neither cooling my oxygen enough nor were they allowing the tank of cold polluted water to drain fast enough. So I replaced the pipes with radiant pipes. I made them from lead, which I imported from Petra.
- I built a few new atmosuit docks. I had refined metal and some of my duplicants were beginning to idle from lack of available atmosuits.
- We lost our nature reserve on Petra. Basically, I dug the wrong tile and ended up flooding my nature reserve, killing all the plants. Luckily, I had other wild plants around the base and was able to reconstruct a new reserve before my duplicants went mad from the stress.

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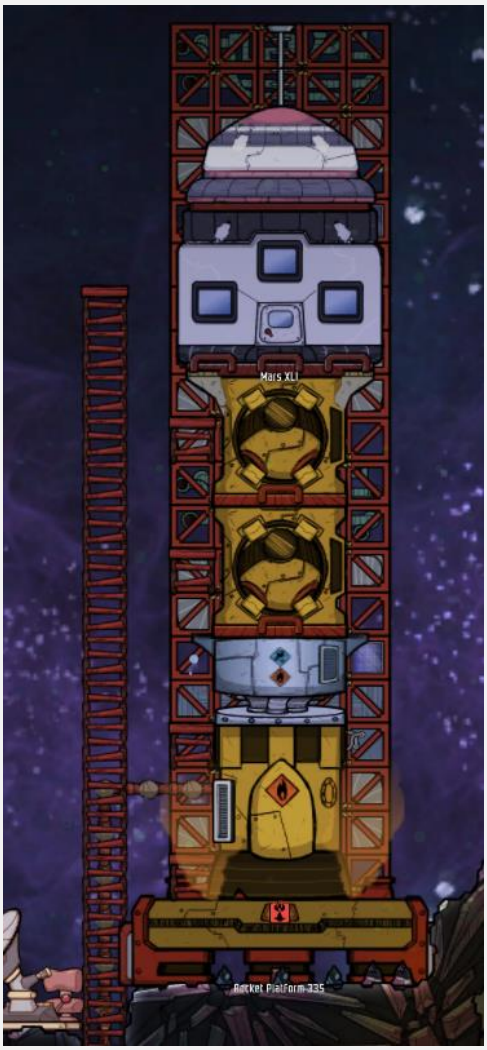
My nature reserve became an aquarium

- We've started work on a petroleum rocket. The plan right now is to use it to get to Chernobyl.

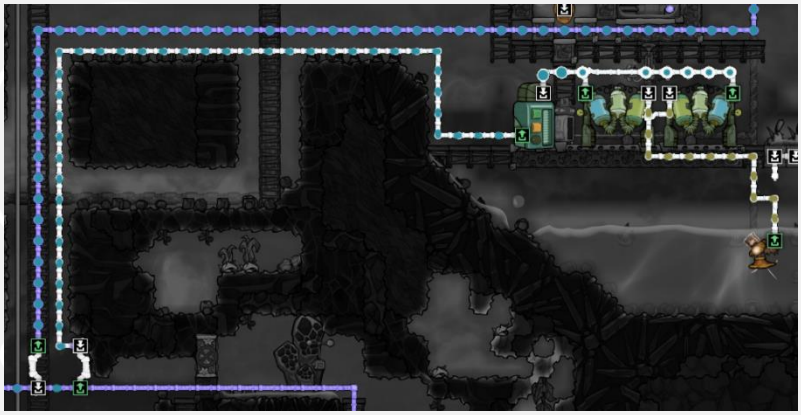


6) Water purifier-

Unlike vanilla ONI, Spaced out is quite generous with water. More often than not, the problem with water is plenty and not scarcity.

When I saw 'water' though, I mean water in all forms, including polluted water, salt water and brine. On this map, we had a starting pool of water, along with a steam geyser as freshwater sources and a polluted water vent and a saltwater vent as our alternate sources. So far the freshwater was more than enough to feed the Rodriguez, the oil pumps, as well other miscellaneous water requirements. But now, our water has run out and we've added a water purification system to meet our requirements.

The logic is simple. We use 2 water sieves to produce 5kg/s each when required (meaning that they produce 1 full pipe together). The piping priority is given such that it uses water from the freshwater sources first, tapping into the sieved water only as a backup.



Automation is not strictly necessary, but it makes for a cleaner setup. The water sieves turn on once the lower threshold in the water storage is reached, and turn off once the upper threshold is reached. The autosweeper feeds the sieves automatically, requiring duplicant intervention only to fill up the storage bin with sand.

7) Building an Oxylite reserve

Oxylite is extremely useful, both as a source of oxygen in space as well as an oxidizer fuel in rockets.

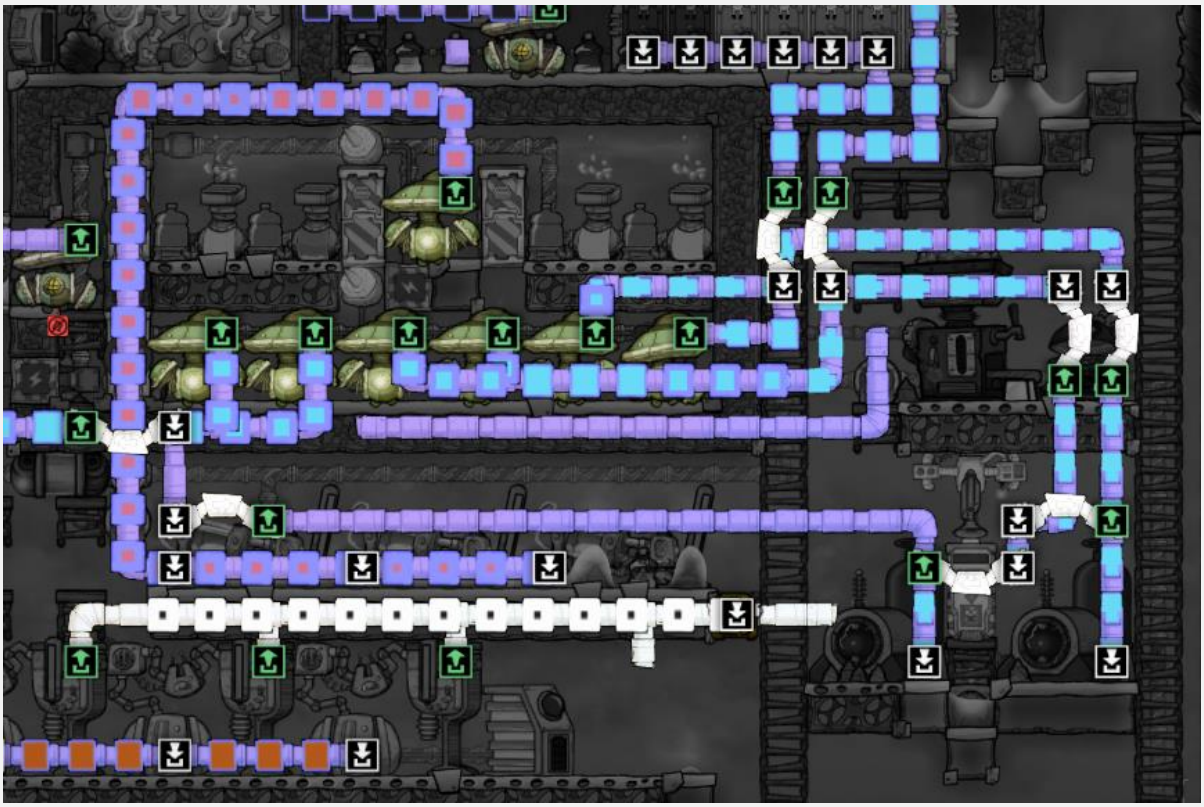
There are three main things to consider when talking about oxylite – the time factor, the temperature and the gold.

- Oxylite production is a slow process with a very low yield per minute. As such, you'll either have to build a large setup with dedicated Rodriguez builds and

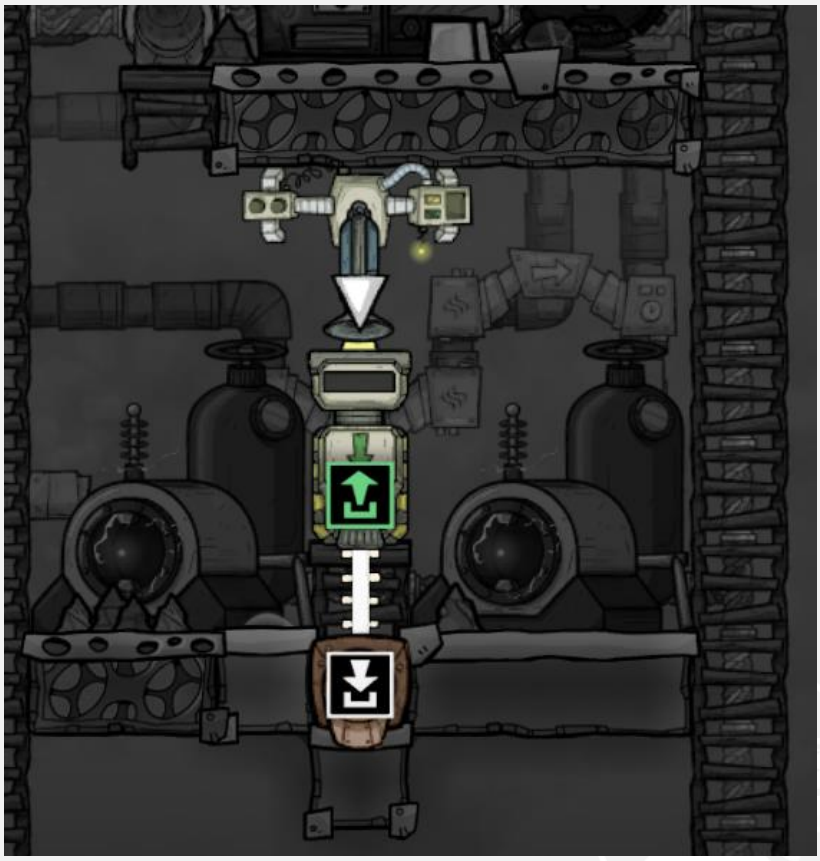
oxylite refiners. Or you can build a smaller setup but build it early so that you always have a stockpile ready when required. I highly recommend the second option as it's the practical way to go.

- The Oxylite refiners run pretty hot, which increases the temperature of the oxylite produced. This isn't a major issue in itself, but you have to be careful not to scald your own duplicants in spaceships, where temperature control is critical.
- Lastly creating oxylite requires small amounts of gold. When you don't have access to a gold volcano, be careful not to over-refine your gold amalgam.

So I already have a Rodriguez in place for oxygen, and I'm not using it to its full potential. So I've rigged the gas pipes in such a way that the atmosuits and the base is supplied with oxygen on priority, but any extra oxygen is sent to the refineries to make oxylite. This is a good way to make passive oxylite in the early game.



A quick note on oxylite storage – Oxylite will convert back to oxygen if left in the open. This can be prevented by storing it in water, or an atmosphere with very high pressure. I have seen some loss of oxylite even in high-pressure rooms (Possibly some sort of glitch in the game mechanics) so I consider liquid storage as the best way to go.



Basically, the autosweeper has access to the floor and the conveyer loader, but not to the water pit. So the oxylite is picked up and delivered to the water pit, where duplicants can come pick it up if required.

8) Base Check –

Things were going so well, but we really need to get to Chernobyl soon. The lack of steel is hampering my progress, but I'm making good progress with the available resources.

We ran into a bug where tasks weren't being prioritized properly, but a restart sorted that out for us.

The following tech was researched –

- Valve miniaturization
- Hydrocarbon propulsion
- Sensitive micromanaging

9) Comparison To The StormFather's Guide to the Galaxy-

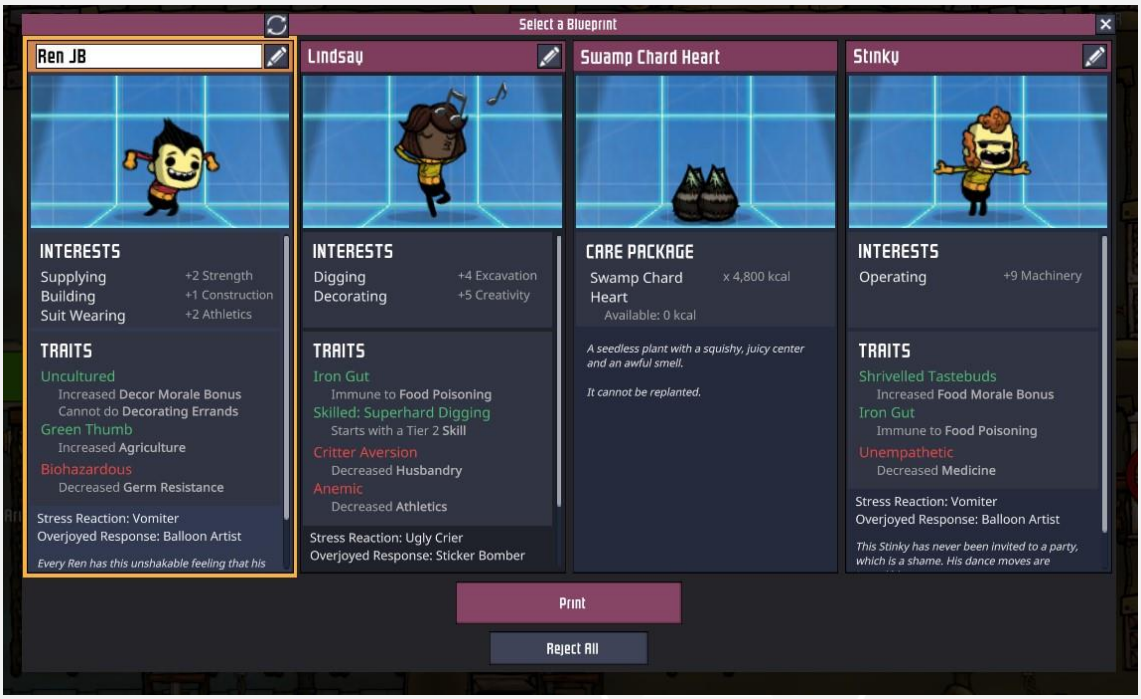
In SGG we were taming Volcanos at this point. But here, we have no access to any metal volcanos to tame anyway.

What we have going for us is faster access to plastic and petroleum, and better readiness for space exploration.

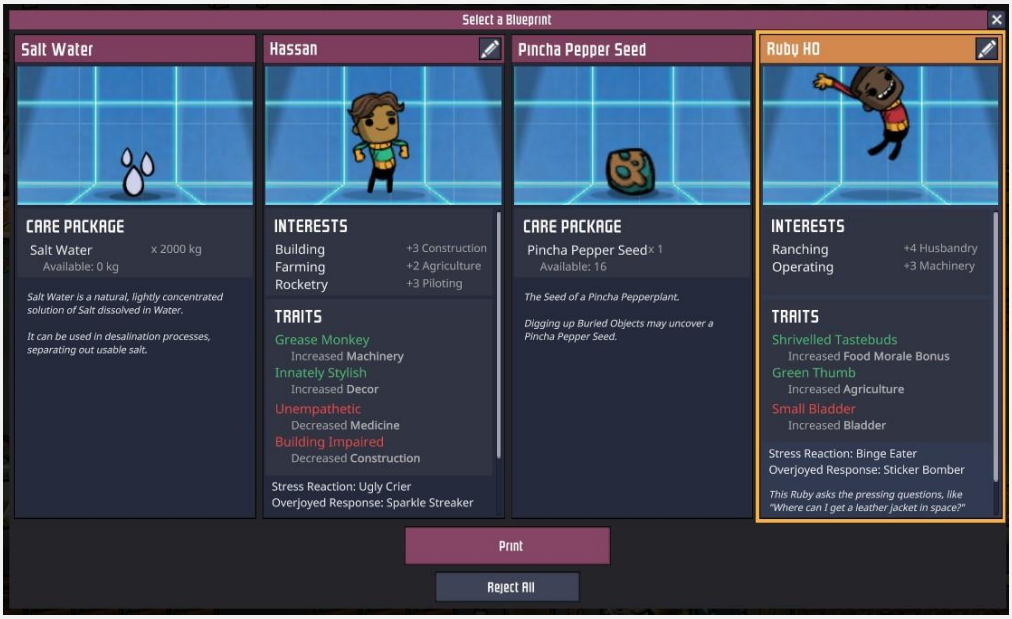
At this point, we have diverged so much from the old rulebook that comparing the 2 series may not make much sense anymore. But I will do it regardless.

10) Meet the duplicants-

We've picked up 2 Duplicants, bringing our total to 13. I usually like taking up to 20 dupes, but that really slows down my game. So unless I get some really good offers, I might stay at 13 for a while.



Nothing very special about them, but an overall solid dupe to have



The increased food morale bonus and the green thumb might make him a good option for planet exploration. His interests are just icing on the cake.

Author's Note –

Thank you for taking the time to check out Project Shatterstar. I hope this helps you to up your game. Each episode will be updated when necessary, so do keep an eye on the change history.

This series is a labour of love and an attempt to create quality written content. It does take up a lot of effort, though, so If you do like the work, please share and recommend it actively. You can also support me directly if you are willing and able.

There is always scope for improvement and new perspectives, so I encourage you to reach out to me if you have any specific thoughts on the work, be it good, bad or ugly. Reddit is the best way to get a hold of me. Do follow me there to keep up to date with the latest on what I do.

Check out the 'Stormfather's Guide to the Galaxy' and 'Academy Not Included', both of which are series that I built on Reddit. SGG is now scrapped, thanks to some complications when Spaced Out came out of Beta. But ANI will continue in some form or another.

Reddit is also the perfect place to point out any errors in the file. Due credit will be given to those who find errors or provide feedback that is incorporated into the file.

To check out any past or future work, or to support or follow me, do check out the following link-

https://linktr.ee/Stormfather

Until next time

Change History –

Date	Version	Change	Credits
8th Aug '22	0	New Release	-