PROJECT SHATTERSTAR

OXYGEN NOT INCLUDED

SPACED OUT!

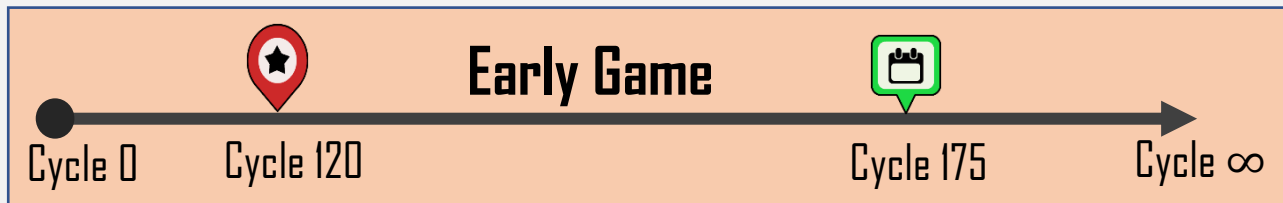☢ VOLUME 1 OF GUIDE TO THE ONI-VERSE

By-
the stormfather

CHAPTER 6 : Crude Oil and Cruder Mistakes

Early Game

Cycle 0 — Cycle 120 ——————————— Cycle 175 —— Cycle ∞

Cycle 120 (Main Planet)

Cycle 175 (Main Planet)

This chapter was a mixed bag, with excellent progress made on some fronts and potentially catastrophic mistakes on the other. Thankfully, all's well that ends well, and we've managed to stabilize the situation.

Highlights :

☢ We set up oil wells
☢ We set up atmospheric control in the core base
☢ We harness natural gas on 2 planets
☢ We have a major crisis in our hatch ranches

https://linktr.ee/Stormfather

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

Planet #3

Codename – **Chernobyl**

Natural Planet (Planet #2)

Codename – **Petra**

Main Planet (Planet #1)

Codename – **Neo Terra**

Petra

Neo Terra

All game art is the property of Klei

1) <u>**Digging up oil wells -**</u>

Oil forms the cornerstone of the way I play ONI. It supports everything from my energy production to my space exploration. These days, I also rely heavily on petroleum for my plastic production, as I've found it to be easier, less labour intensive and less demanding on my computer than the use of plastic dreckos.
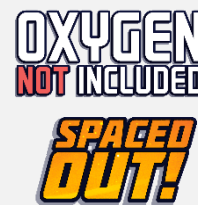
Since the map does not allow for easy access to large amounts of steel, I decided to skip that step and go straight for petroleum production. The first step to this would be pumping out oil.

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☢ CH 6: Crude Oil and Cruder Mistakes

Crude oil production is a simple enough process. Find the naturally occurring oil vents, build oil wells on them, and pump water into them. In return for the water, the wells give out crude oil and some natural gas, which has to be regularly vented by a duplicant.

In the last few games on Spaced Out, I did not find more than 3 oil vents on the map. This time, we're lucky enough to have 5. Unfortunately, we will not get much benefit from it in the short term. 3 oil wells can produce 10 kg/s of crude oil. Since the oil wells are on Petra and our heat source is on Neo Terra, I'll have to use the teleporter system to transport the oil. This system can only support 10 kg/s, meaning that the 2 extra wells can only be used to build up a buffer. Even so, it's good to have more than required.

Water in, crude oil out.
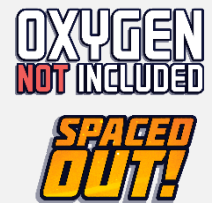
Now let's get to the point of how we are going to build those wells. The simplest way would be to just slap a well on a vent and call it a day. But if you've been following me for any length of time, you know you're not getting away that easy.

The wells output 2 products – crude oil and natural gas. Both are useful materials, so collecting them at the source makes a lot of sense. Here, I've tried multiple designs but this latest one is the simplest, while being just as effective.

It's basically a closed box with a kink at the entrance that can serve as a liquid lock. Once the well starts pumping crude oil, the liquid lock gets filled, which prevents the movement of gas between the well chamber and the outside world. This liquid lock is self-balancing and will keep leaking oil off the end as more oil gets pumped into the chamber. In earlier iterations, I've used an automated door attached to a hydro sensor….but I've found this to be unnecessary.

The ambient natural gas was the result of the gas produced when the liquid lock was not in place yet.

Now, all the natural gas is locked into the gas chambers.

With the liquid lock in place, all gas produced by the well is collected in the well chamber and can be pumped out and burnt for energy. You'll notice that I have a loop and sensor system at the output. This is a powerless filter, which I will get into in more detail later. Right now, let's understand why it's required.

I am all about 'prevention is better than cure' but I acknowledge that it's not always possible. Oil wells are one such exception. I have found that no matter what I do and no matter how careful I am, some water pipe inevitably breaks and at least some water turns to steam in my oil well chambers. This steam messes with my atmo pressure sensors and can get into my natural gas pipes and damage my buildings. With this

experience in mind, I feel much more comfortable having a filter setup that ensures only natural gas goes into my generators and any steam is removed from the system as soon as possible. I also use 2 atmospheric sensors to ensure that there is less of a chance of steam clogging up my build.

We also got lucky to have 3 wells so close to each other. I was able to position the outputs such that all the produced crude oil empties into a single large collection tank. This tank too will have some contaminants such as water in it. But crude oil is dense and sinks to the bottom, making filterless collection easier.

2) **Powerless filters are a powerful tool -**

'Powerless' filters are a bit of a misnomer because they do use up to 20W of power to operate. Even so, a conventional filter takes 120W, so that's 83% less power usage. Let's learn how to make one. Also, note that this filter will also work for liquids and solids.

But these require refined metal and have overheat temperatures, meaning that lead can rarely be used to make them. Here I have used copper for now, but I will switch them to steel as soon as it's necessary.

The concept of a powerless filter is simple, but it's easy to get wrong so follow along carefully. This will require an understanding of basic pipe mechanics, so please check my Academy Not Included article linked below if you need some clarity.

https://www.reddit.com/r/Oxygennotincluded/comments/pf4ukw/academy_not_included_1_the_basics_of_pipe_and/?utm_source=share&utm_medium=web2x&context=3

So the filter has 4 components. 1 input, 1 infinite loop and 2 outputs. The input takes in the raw gas and feeds it into the liquid loop via a bridge (to give priority to the liquid loop). The liquid loop will keep cycling the gas, in case any of the outputs fail or are jammed. One of the outputs removes the desired gas from the loop whereas the other filter removes every other gas from the loop.
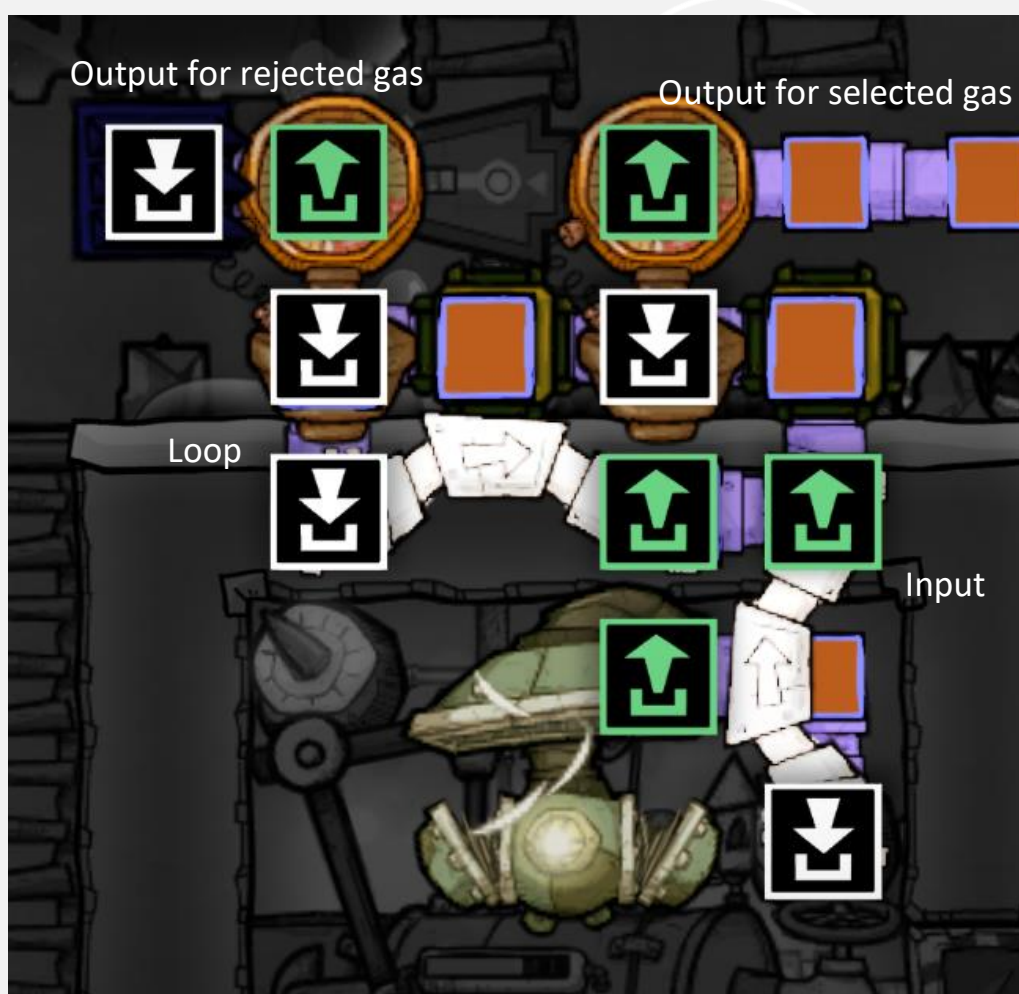
To select which gas is output where, we use gas element sensors, which send a green signal when the required gas is detected. The gas shutoff is placed in the tile next to the sensor. When an element is detected, the shutoff activates and the material gets picked up by it. Make sure to place the shutoff downstream from the sensor, i.e. the gas should move from the sensor to the shutoff and not the other way around.

NOT gate

Selected for natural Gas

2 sensors to prevent lockups
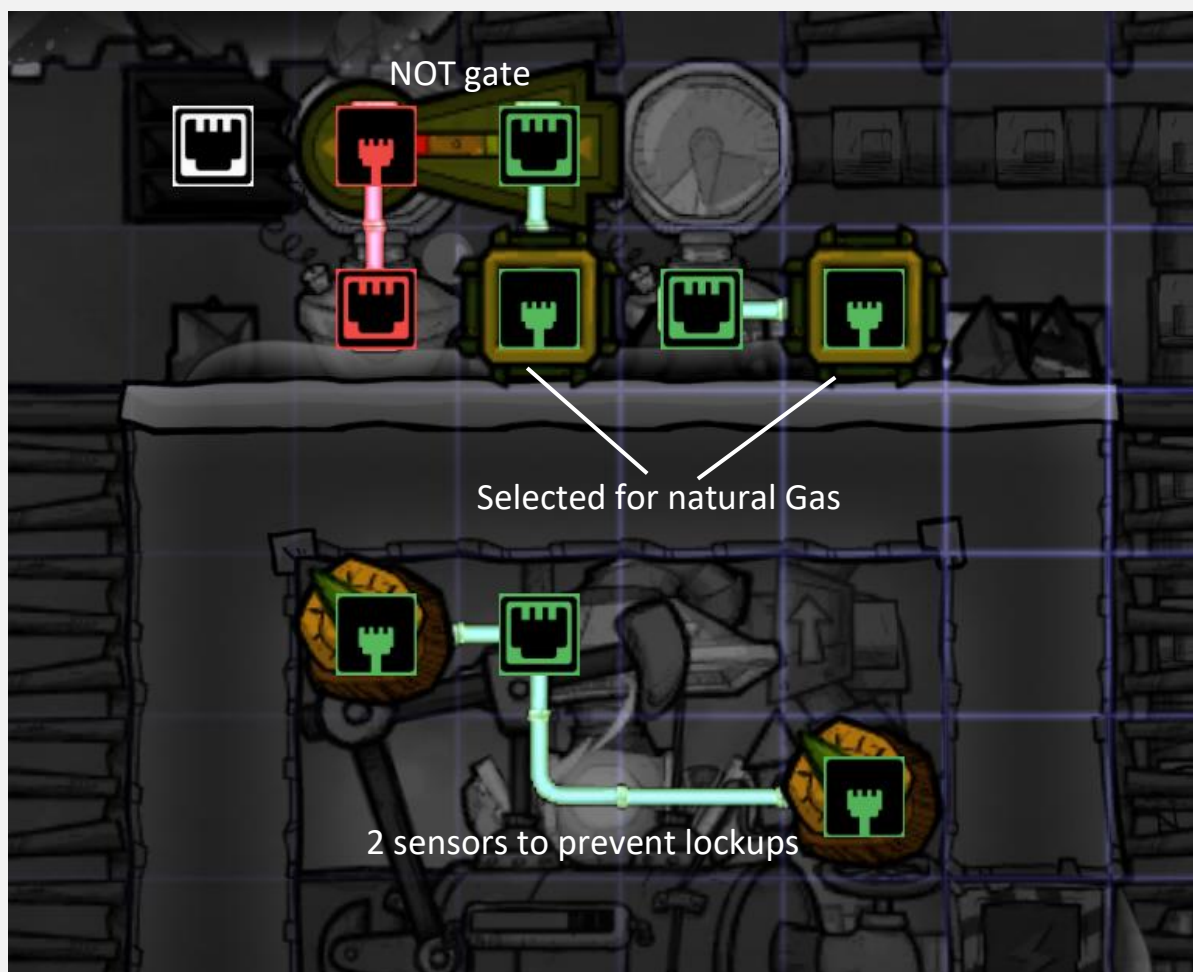
The second output has the exact same configuration as the first, with a tweak in the automation. Here we add a not gate between the sensor and the shutoff. So the first output will activate when the gas in the pipe is natural gas. The second will activate when the gas is NOT natural gas. This will ensure that the filter will operate with no hitches, as long as the NOT output does not get blocked. Even if it does, there will be no mixing of gases, but there is a possibility that the natural gas output will get blocked as well. But this would be the case in a conventional filter as well, so this isn't a unique problem.

The infinite loop is the most critical part of the powerless filter because of how a shutoff works. Because the shutoff is activated by what gas is there in the pipe next to it, there is a possibility of undesirable materials getting into the output pipe if it's used without a

loop. Also, if there was no loop, any blockage in either output will jam the filter. So make sure your loop is working well. Don't hesitate to find me on Reddit if you need help.

If you have 2 gases you want to filter out, I would suggest that you use 2 of these filters in series, meaning that the first filter will remove gas A and send all the 'Non-A' gas to the second filter which will remove gas B. You can just use 2 shutoffs on a loop to remove gas A and B directly, but the disadvantage here is that if by any chance a gas C enters your loop, your filter will jam.

3) <u>Atmospheric Control -</u>

In the last chapter, we had set up piped oxygen in our core base on Neo Terra and had sealed off the base from the rest of the planet with airlocks. But having done that, we need to do something about all the CO2 that is created in the base.

Selects any gas is not Oxygen

I usually find one or two low points in the base and stick a gas pump with some automation. The way it is set up, it will activate if neither of the 2 sensors detects any oxygen in the atmosphere. If you need any help on the basics of automation, I have Academy Not Included chapters on that as well

https://www.reddit.com/r/Oxygennotincluded/comments/pfr4xm/academy_not_included_2_the_basics_of_automation/?utm_source=share&utm_medium=web2x&context=3

https://www.reddit.com/r/Oxygennotincluded/comments/pp8s7t/academy_not_included_3_the_intermediate_guide_to/?utm_source=share&utm_medium=web2x&context=3

I have not added atmospheric control on Petra just yet, but I will at some point soon.

4) <u>Harnessing Natural Gas</u> –

Unless you're going for some sort of achievement run, natural gas makes for an excellent energy source. Here, we're lucky enough to find geysers on both planets.

I would recommend you familiarize yourself with the basics of vent and geyser mechanics. I don't have any dedicated material on this, but you're sure to find some online.

For example, natural gas geysers have an overpressure value of 5 kg, beyond which they will stop emitting more gas. Hence it is desirable to remove any produced gas and store it elsewhere to ensure that there is no blockage.

For this, I use an 'infinite storage' setup, which you all may not be comfortable using. Many players consider any infinite storage exploit as 'cheating'. I myself do not use infinite liquid storage, but am perfectly happy using the gas version.

I try not to get into the morality of using exploits. It's an individual choice. Do what is convenient and what makes your game more fun. And never let anyone tell you differently.

With that little disclaimer out of the way, infinite gas storage. This exploits the fact that one tile can hold either a liquid or a gas. Thus if a tile has some liquid in it, gas cannot enter it. So if we immerse a gas vent in a certain amount of liquid, the gas vent overpressure threshold will be governed by the liquid on the tile and not the gas around it.
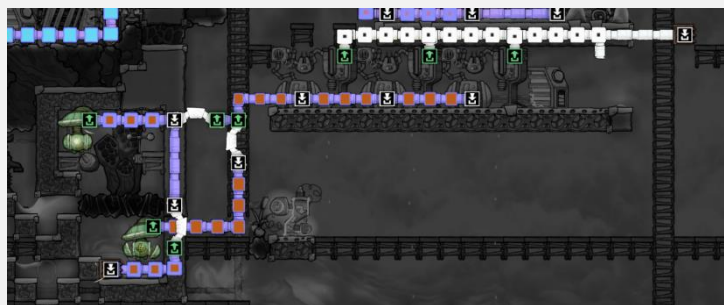
Natural gas infinite storage

Here, by spilling a few kilos of water, I can send an infinite amount of natural gas into this airlocked box, because no matter how much gas is in the chamber, the vent is tricked into thinking the pressure is only a few kgs. Setting up this equilibrium with gas vents is hard because if the liquid is too little, it will be deleted. On the other hand, if it's too much, the vent will get overpressured. I would prefer to use a pressure gas vent, but I don't have any plastic to build it.

So, I can set up an automated gas pump to pump out natural gas from the geyser chamber once the pressure is above a certain threshold – say 1kg. I can also do some fancy pipework to send natural gas to the generators directly from the vent chamber and use the infinite storage only as a backup. But that's a discussion for the next episode.

Also keep in mind that natural gas geysers produce a lot of heat, meaning that using water for the airlock is not a good idea in the long term. I will either seal off the chamber with an insulated tile or replace the liquid with crude oil or petroleum. I have a feeling I'm going to be doing both.

I'll be doing the same on Petra, but there the oil wells will be an additional source of natural gas, which will be directed into the infinite storage as well.

5) Not doing is just as important as doing -

This is a bit of a tangent, but I have to fit this in somewhere. Probably should have done it in a previous episode.

As the title suggests, what you don't do in ONI is just as important as what you do. This is by no means an exhaustive list, but I'll talk about 2 things here – disinfection and repair.

You've probably seen your duplicants doing a lot of disinfection, especially if you just broke into a slime biome. Basically, once the concentration of germs reaches a certain threshold, a duplicant will come around and disinfect the infected items, getting rid of all those germs.

This, in my opinion, is a total waste of time.

Germs are not that big a deal in ONI, and nothing short of zombie spores will put any sort of dent in your colony. Especially the way I play, duplicants are in atmosuits all day, coming out of them only in the core base. There are occasional infections but they get increasingly rare as the game progresses. The amount of time a duplicant takes to disinfect random structures around the map is much larger than the amount of time or resources lost to the occasional infection.
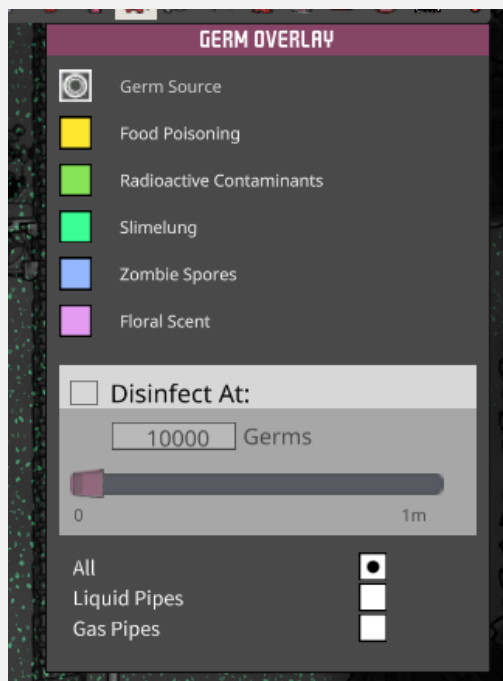
Repairs, on the other hand, are a useful tool. Even so, I disable auto repair on some of the structures around my base. Examples are atmosuits, power generating buildings, or any building made of rare or precious material like steel or even refined metal. The reasons are as follows –

- ☢ Broken buildings are often a symptom of a larger problem. With autorepair enabled, I often don't even know that there was anything wrong with the system in the first place. Sure, broken buildings can cause disruptions as well, but that's a risk I like to take when I play.
- ☢ Repairing a building takes extra material. On the other hand, you could just demolish it and rebuilt it instead, which would take no extra material at all. This becomes especially critical when you're building with rare or low-availability materials.

6) **The petroleum boiler -**

Not getting into the specifics of the build, that's for the next chapter. But we have built the primary components of the boiler and should be ready to prime and fire it in a few cycles. I have experimented a bit with my previous design so I actually don't know if this will work out. Wish me luck.

I will talk a bit about the placement and concept though. In ONI, crude oil spontaneously converts to petroleum when taken to a temperature above 402 degrees. This is a 1 to 1 conversion and does not require duplicant involvement. This little mechanic allows us to efficiently convert crude oil to petroleum using lava as a heat source.
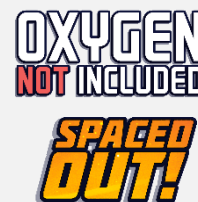
When I first started playing ONI, the thought of building a petroleum boiler was very daunting. I saw petroleum boilers that harnessed lava from volcanos with complex automation. I saw boilers that were just 1 tile high per segment, meaning that once it was built, no duplicant could repair it. And with these images in mind, I decided petroleum boilers were not for me.

But then I learned that a diamond spike in the ground had more than enough heat to get the job done. I also realised that a boiler 2 tiles high worked just as well, and only took more space which was an acceptable trade-off. And then, there was no looking back. The petroleum boiler has been a cornerstone of my gameplay ever since.

Here, I've gone for a rather unconventional placement of the boiler, because I'm trying to experiment with how compactly I can build and get away with. The way this is built, It's going to be a bit hard taking the petroleum out of the boiler. I've opted to place to boiler here because of the close proximity to the teleporter, which will allow me to pipe the crude in quickly and efficiently.

7) Ranching Crisis

In my quest to rush my boiler construction, I lost sight of the basics and made some mistakes. None of them was a game-ender and my base will be unaffected in the long term. But the mistakes were made nonetheless. Even so, It's important to talk about them.

You are eventually going to mess up- that's just how the game is. All you can do is check your systems regularly and build in buffers when possible. It was only because I followed these rules that my base will not suffer a collapse. Learn from my mistakes and try not to repeat them. I made 3 mistakes in total –

☢ Forgot my construction priority- This was a minor error, where I built my boiler frame well before I built my natural gas generators. This resulted in a power shortage in my base once I turned on my gas pumps to vacuum out the boiler. Ended up wasting a few cycles as I paused the vacuum job and hastily built some natural gas generators. This will not have any lasting effects on my base.

☢ Forgot my research priority- Another minor mistake, where I neglected to get all the necessary tech to get the boiler made. Usually, the boiler is a project I tackle after 200 cycles or so, by which time all intermediate tech is already researched. But this time, I missed out the windows tile tech, which I needed to build my diamond spike. Again, I wasted a few cycles as I switched the research to get the required tech. In this particular case, there were no lasting effects on the base. But researching tech in the wrong order could slow you down a lot when you need radbolts and databanks, both of which are often in short supply. Just something to keep in mind.

☢ I let my hatches starve to death- This was a pretty major error. Luckily I caught it in time, so we'll be fine…but it was a close shave. Here are the series of events

  😣 Hatches can only eat certain food. They eat organics like mealwood and meat and such, but feeding hatches food that a duplicant can eat doesn't make sense to me. In any case, I don't have a sustainable source of organics.

  😣 In the beginning, I had my hatches set to eat Sandstone and the critter feeders were set accordingly. Because I haven't really dug up too much of the map, I did run out of sandstone soon enough. I was expecting this and quickly changed the food source to sedimentary rock.

  😣 Sedimentary rock is a 'gateway food' of sorts. Feeding hatches sedimentary rock increases the chances of getting Stone hatchling eggs. Stone hatches are a hatch morph that can eat other raw minerals like granite and igneous rock, which are much more abundant. These materials aren't 'renewable' exactly, but the available quantities are so vast that I can run these ranches on them for at least a thousand cycles before I need to worry about feeding them.

  😣 I had a very small quantity of sedimentary rock available. But my logic was that I would feed my hatches with it and slowly and smoothly transition to stone hatches ranch by ranch, setting my incubators to only pick up stone

hatch eggs. In this way, I would move to stone hatches with little to no disruption in the meat supply.

- 😖 Predictably, I forgot about the whole thing in the excitement about the boiler. When I did finally check my ranches, half my hatches had died and the other half were starving to death. In any case, they hadn't produced eggs for at least 10 to 15 cycles.

- 😖 Fortunately, there were about 30-40 stone hatch eggs in the evolution pool (In fact one stone hatching was evolving right in front of me). I quickly took out all stone hatch eggs from the water using a temporary storage bin and set my incubators to take stone eggs. I also set the critter feeders to granite.

- 😖 My hatch farms are slowly being repopulated, but the damage is done. I estimate I've lost at least 30-40 cycles worth of meat production. Fortunately, I had built up a reserve, but by my calculation, it will just barely be enough. Still, could have been worse.

- 😖 I will build some sort of warning system to warn me of low mineral supply eventually. But we don't need to worry about it for a hundred cycles at least- we have enough granite.

Food, oxygen and temperature are the biggest base killers. And they can get you no matter how far into the game you are or how experienced you are. So always keep an eye on these metrics.

8) <u>Base Check</u> –

Things were going so well, but now thanks to the ranching snafu food will be tight for the next few dozen cycles. Apart from that, the base is progressing well.

Petra now has 3 duplicants in total. The rest are on Neo Terra. Once the petroleum boiler is done, we can think of sending someone to space or to Chernobyl.

The following tech was researched –

- ☢️ Durable Life Support
- ☢️ Catalytics
- ☢️ Solid Control
- ☢️ Superheated Forging
- ☢️ Renewable Energy
- ☢️ Pharmacology
- ☢️ Medical Equipment

- ☢️ Pathogen Diagnostics
- ☢️ Micro-Targeted Medicine
- ☢️ Radiation Protection
- ☢️ Advanced Caffination
- ☢️ Home Luxuries
- ☢️ Glass Blowing

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

SGG still looks 'better' in a lot of ways. We have small quantities of plastic available, thanks to the small plastic presses we've set up.

Our incubation system is a lot more robust, but this is a conscious change in this game. I am not planning to rely too heavily on ranching this playthrough, at least not right now. So the few incubators we have will do for now.

We also already have a rocket ready at cycle 175 in SGG, but that is another conscious change. We don't really need data banks right now, and rockets will be our next priority anyway.
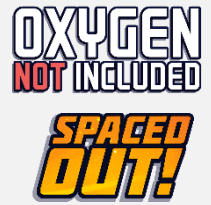
The big positive is that our petroleum boiler is ready to be primed and commissioned. At this stage in SGG, I wasn't even thinking about it, so the speed difference will be quite significant.

10) <u>Meet the duplicants-</u>
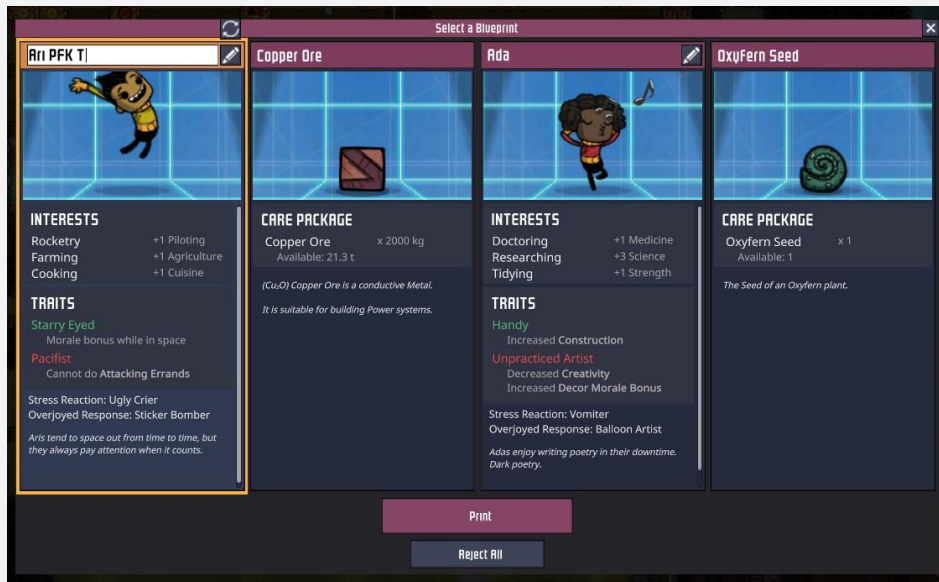
We've picked up another dupe, and one with the new Spaced Out style perks. I have a feeling they'll be good for space exploration.

Select a Blueprint

Ari PFK T	Copper Ore	Ada	Oxyfern Seed

INTERESTS
Rocketry   +1 Piloting
Farming   +1 Agriculture
Cooking   +1 Cuisine

TRAITS
Starry Eyed
    Morale bonus while in space
Pacifist
    Cannot do **Attacking Errands**

Stress Reaction: Ugly Crier
Overjoyed Response: Sticker Bomber

Aris tend to space out from time to time, but they always pay attention when it counts.

CARE PACKAGE
Copper Ore   x 2000 kg
    Available: 21.3 t

(Cu_2O) Copper Ore is a conductive Metal.

It is suitable for building Power systems.

INTERESTS
Doctoring   +1 Medicine
Researching   +3 Science
Tidying   +1 Strength

TRAITS
Handy
    Increased **Construction**
Unpracticed Artist
    Decreased **Creativity**
    Increased **Decor Morale Bonus**

Stress Reaction: Vomiter
Overjoyed Response: Balloon Artist

Adas enjoy writing poetry in their downtime. Dark poetry.

CARE PACKAGE
Oxyfern Seed   x 1
    Available: 1

The Seed of an Oxyfern plant.

Print

Reject All

Rocketry, farming and cooking aern't exactly revolutionary traits, but they'll do.

I'm more interested in how the 'Starry Eyed' trait works out for me.

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-
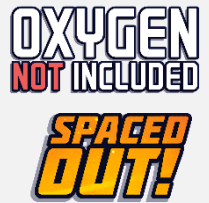
https://linktr.ee/Stormfather

Until next time

Change History –

Date	Version	Change	Credits
19th May '22	0	New Release	-
19th May '22	0	Spell-check and editing	diet_gingerale