Atomic Particle Reservoir and Combination Fission, Fusion, and Anti-matter Propulsion System

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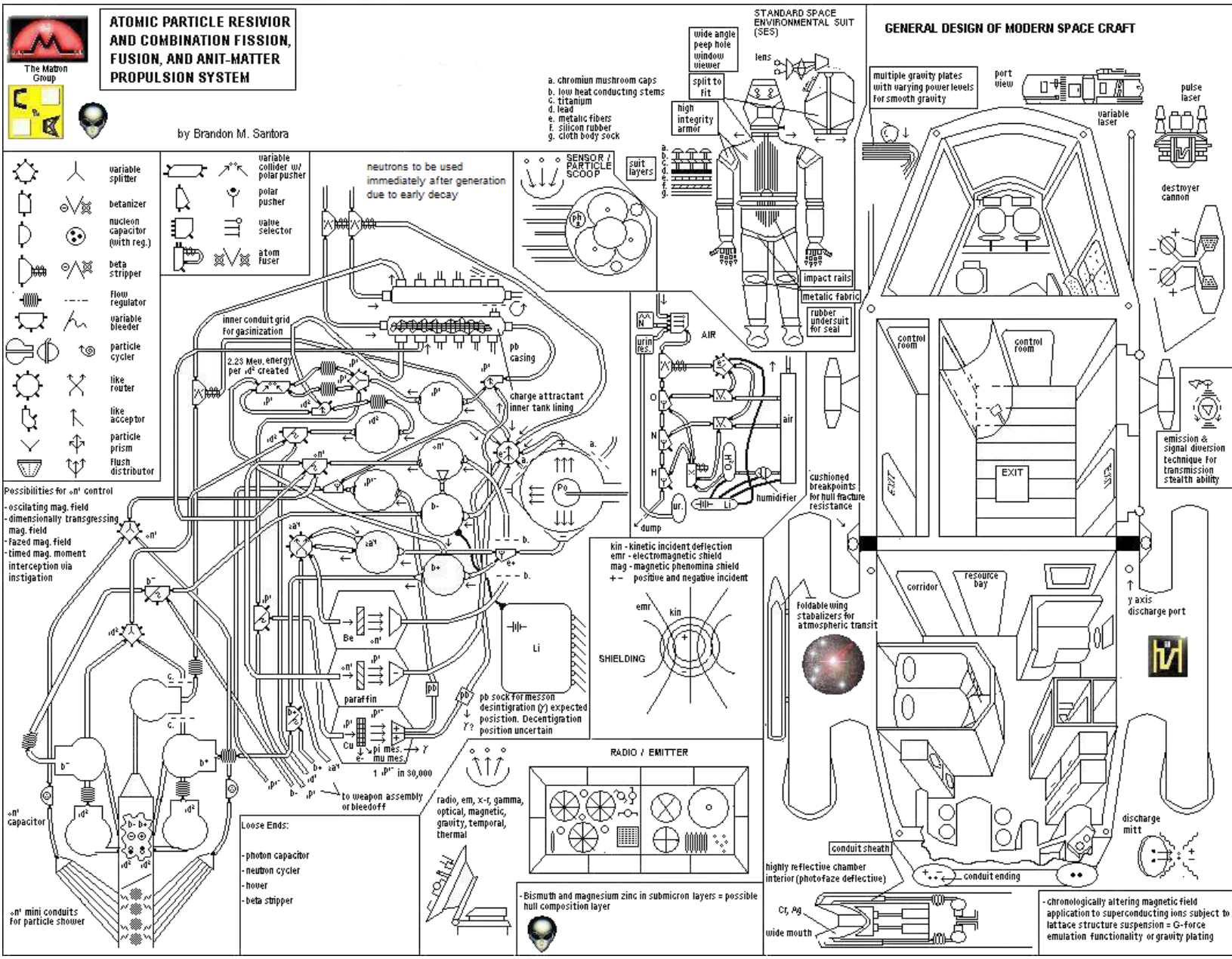
October 25, 2011

The complex apparatus detailed in this work, is a system designed to store and regulate atomic particles for use in new spacecraft propulsion and power systems or other important needs. This is a basic layout of the components and devices needed to operate the machine. Below is listed a glossary of the components and explanations if the functions. Use maximum screen view for better diagram clarity.



Components

The devices listed below are experimental and the existence of any of them is unknown and certainly possible. If not, most of them should be creatable. The symbol and sketch of the components are situated in the key in the diagram.

- **Particle Transfer Conduit (PTC)** – This component is a pipe of sorts, which can be magnetized to allow charged particles such as protons, electrons, and their anit-equivelents to channel through them to reach a desired destination. The magnetized conduit will prevent the particles from impacting the tube itself and must be vacuumed.
- **Variable Splitter** – This component is designed to alter the path of a charged particle as it flows through the PTC to another adjacent path for delivery to another location for some purpose. The device may work by having charge detectors in the intake, which will determine the type of particle and then instruct a magnetic bumper to activate long enough to push the particle into another conduit attached to the splitter. The bumper will probably be very quick, instantaneous and focused in order to target the tiny particles traveling through it.
- **Betanizer –** This component normally merges a nucleon PTC with a PTC channeling beta particle or electrons. This will serve to create an atom with whatever nucleus is needed to form by merging the electron with the intended nucleon not including neutrons or negative anti-particles. This device is the opposite of the Betastripper.
- **Nucleon Capacitor –** This device simply holds an amount of particles in it in order to serve as a reservoir so the destination can maintain a steady intake. It should be magnetized like a PTC to keep the particles suspended and can allow compressions of like-charge particles. It is probably similar in function to an electric capacitor used on circuit boards though more heavy duty and includes the storage of positively charged particles.
- **Betastripper –** This device could solve perhaps 90 percent of the energy problems in the world if utilized. The Betastripper is capable of removing electrons from a substance and directing them to a needed location and channels the subsequent positive nucleons to their needed location. The amount of electrons to be removed from any substance is enormous and if doable would be more than enough to supply electric power as well as free beta particles.
- **Flow Regulator –** This device compresses or gaps a stream of charged particles in order to create an appropriate rate of flow into a system such as a discharge core, which may need a specific quantity of particles at a time to enter an apparatus. It will use magnetism to impede or increase a particles position within a PTC. It could in addition be used to prevent particles that might couple or fuse when flowing in the same conduit.
- **Variable Bleeder –** This component is similar to the Variable Splitter in that it redirects charged particles. This allows particles to be bled to other systems or locations for other uses. This however creates gaps in the particle stream, which is why flow regulators and capacitors are necessary at different points to reestablish a correct rate of particle flow. This would work by using the magnetic bumping method.
- **Particle Cycler –** This is a scaled down version of a synchrocyclotron or regular cyclotron. This will be used to capacitate and regulate charged particles for special uses such as injection into a discharge chamber. The device can store particles like a capacitor by keeping them cycling inside until needed and then ejected at the appropriate energy necessary.
- **Like Router –** This device reroutes specifically charged particles to another location such as a reservoir or bleed off point. For example if you have a stream of charged particles consisting of electrons and anti-protons and you need the anti-protons only this device can extract them from the stream and redirect them. It could use a charge to mass ratio detector to make these determinations. Also if you have a stream of protons and alpha particles, which are both, positive the device should easily detect the charge amount to distinguish the two. A proton could read with a charge of 1 and an alpha particle could read with a charge of 2. This would use the same magnetic bumping system as with the other devices to redirect the targeted particles.
- **Like Acceptor –** Similar in aspiration though opposite in function this device doesn't divert specific charged particles but merges them from several different sources. It will be set to accept only like charges from the particle stream and is simply a junction and rerouting point.
- **Particle Prism –** This component works like a showerhead and allows the particles to spray in a desired fashion. The word prism was used since it could be analogous to the way a prism separates light spectrums. There would be multiple magnetic bumping taking place in order to feed the particles into the divided minicounduits. In some cases it may include internal flow regulators because the particles may not eject evenly from the prism. If this is a problem then a flow regulator will allow the particle ejection to be level as they expel from the multiple ejection ducts.
- **Flush Distributor –** This component works similar to the Particle Prism and is designed to eject particles evenly as a wide beam of sorts. It would create even clouds of charged particles.
- **Variable Collider –** This device allows two particles to be collided for some purpose for example to fuse. A stream of protons can be split and regulated so they collide to allow the proton-proton reaction to occur. One proton will convert into a neutron forming the deuteron while releasing a positron that can be diverted to the b^+ reservoir. It can be used to collide other particles as well. However if it is not possible to make deuterons with the proton-proton reaction because of the high temperatures needed to do so, then deuterium can be made perhaps easier by fusing them with neutrons directly derived from another source. If it is insisted to use the proton-proton reaction then the variable collider may need to allow the colliding of other particles and its antiparticle such as an electron and a positron to provide sufficient temperatures in order for the protons to fuse. It may need to be continuous for the electrons and positrons to keep the temperature high enough or it could possibly be a kick-off energy to start the first deuterons then continuing the flow rate specifically enough so that the proceeding deuterons can use the energy of the preceding ones to fuse in a self sustained reaction. This is also the method for the sustained reaction in the engine core as seen on the diagram herein.

- **Polar Pusher –** Like other components such as the Like Router and Variable Splitter this one is designed to divert specific particles to adjacent conduits. If there were a stream of bare nuclei from different sources flowing through the same conduit then the Polar Pusher will detect the charge number and identify the particular nuclei so it can instruct the built-in magnetic bumper to move it into another track.
- **Atom Fuser –** This device has multiple intake ports to accept different kinds of bare nuclei such as Hydrogen and Oxygen and merge them appropriately with electrons to form a molecule. The device can also intake the atoms accompanied by electrons, strip them, and then redirect them to reconvene with the two different nuclei to form the desired molecule. It is probably a combination of a Beta Stripper and a Betanizer. This can be used to create water for example and even if it is from a contaminated source such as urine. To do so the utilization of Beta Strippers, Polar Pushers, and Atom Fusers should be used in sequence**.** The urine is stripped of its electrons which are diverted to other sources and some kept to be used in the Atom Fuser later. Then the bare nuclei will pass through the polar pusher, which will be set to redirect only the Hydrogen and Oxygen nuclei toward the Atom Fuser where they will remerge with the appropriate number of electrons from any source. The remaining nuclei from the urine which will be of elements that were the makeup of the contaminants can be used elsewhere for some other need or discarded if too many of them are leftover.
- **Neutron Capacitor –** It is not known to me how this component works. It is similar to trying to find a way to channel neutrons through a conduit. As we know a magnetic field doesn't readily affect the neutral neutron and cannot be channeled or stored well. Here are some hypothetical methods to try to control neutrons. There may be an easier way to do so that is unknown to me.
  – Oscillating magnetic field
  - Dimensionally transgressing magnetic field
  - Fazed magnetic field
  - Timed magnetic moment interception via instigation
  The last one seems more likely from what I know which is not much. A neutron has a magnetic moment. What this is saying is if the magnetic moment of a neutron is frequent enough or if it can be instigated then we might be able to make it magnetizable enough to control it.
- **Photon Capacitor** – This is a hypothetical device that to my knowledge doesn't exist but if available could have many uses. Trying to store photons is likely more difficult than trying to channels neutrons. Photons do not have any charge and is unaffected by conventional magnetic fields. However there are some works made by previous scientist such as Richard Feynman who dabs a little in the possibilities of photons having magnetic or charged properties in some way. After all it has been seen in experiment that the disintegration of for example a gamma ray photon can yield a positron and an electron. We know that matter and energy are interchangeable and you can convert one into the other. In this experiment we see that the disintegration of the photon created the mass of the electron and positron and also charge derived from the energy. This can be read upon the work, *Quantum Electrodynamics* by Feynman.
- **Polar Funnel** – This object is funnel shaped and is made to attract charged particles of specific polarization. To attract protons the funnel will have a negatively charged surface. If the particles stay stuck to the surface of the funnel then there will be a positive sheet covering it. The next protons to come into the funnel will be repelled by their stuck neighbors and will this allow additional protons to slide into the funnel and from there into a particle transfer conduit. It is also possible that no protons will stick to the surface and will instead slide inside as planned. Positively charged funnels can be used for attracting other particles such as electrons. It may not be a good idea to try to attract anti-protons to a funnel since any possible contact with a proton in the funnel may cause detonation. The same goes for trying to attract positrons with a positively charged funnel. Since electrons are on the outside of an atom there is likely more chance of positrons annihilating with the electrons of a funnel than antiprotons with the nuclei of a negatively charged funnel. I'm reasonably certain there is a way around this. Now we will move on to the workings of the machine in the diagram.

How it Works

About in the middle of the diagram you'll see a chamber with a disc attached to a rod in it. That is an **Intake Chamber** where radioactive material such as Polonium will be placed. By the work of the **Polar Funnels** the alpha and beta radiation particles will be drawn into the system and stored in the cycler capacitors located to the left of the Intake Chamber. They look like 7 arranged circles. The symbol marked on the capacitors indicates which particle or charge is intended to be stored there. Channeling electromagnetic radiation such as x-rays and gamma rays are not known to be possible and they will be mostly absorbed into the lead lining of the chamber. This intake will only extract protons and electrons. To get the other particles we need for a space craft or other intended purpose the particles will have to be routed to other locations in the apparatus for conversion or generation. The next primary particle will be the neutron. To get them we will channel alpha particles derived either from the Intake Chamber or drawn in with the **Sensor/Particle Scoop** located in the top middle of the diagram. There are many types of particles, which can be found in space mostly originating from stars in solar winds. The alpha particles are sent to another apparatus located below the circular particle capacitors. The first one is where neutrons are generated. As can bee seen the alpha particles are directed into a plate of Beryllium, which will incite the ejection of neutrons. Then they will be sent back to the appropriate cycler/capacitor above. The method of channeling the neutrons through the conduit system is still unclear as mentioned before.

If we do not already have protons stored from scooping them up from space we can get more by channeling neutrons to the second apparatus below the neutron generator. The neutrons will be directed into a plate of Paraffin to eject protons. They will be channeled back to the proton cycler/capacitor above. We are studying the generation of these particles in order of importance. So we will move on to deuterons. We can either create deuterons using the proton-proton reaction or extract them from the protons drawn in from the Sensor/Particle Scoop. The first method will have us to send protons into the Variable Collider located at about middle, middle left of the page. If accomplishable we can collide the protons with sufficient energy causing one of them to convert into a neutron at the same time releasing positrons that will be sent to the beta plus chamber located near the Intake Chamber for storage. It might be easier to use the other method. Protons extracted from space or channeled to the **Particle Modification Tanks** near the top middle of the page can be gasinated by neutrons injected into the tank. The interior of the tank has a 3 dimensional grid work of conduits,

which are porous to release neutrons with a more even distribution. The conduit leading from the proton chamber to the modification tank is not drawn. Once the deuterons form they are directed to their designated storage chamber. The modification tanks also are connected by conduit to a **Manual Input Port** where other materials can be input such as Radon gas or Uranium nuclei that has been stripped of its electrons. Those are intended to be directed to the **Discharge Chamber** located at lower left of the page and will be discussed later.

As mentioned earlier we can get electrons from radioactive substances placed into the Intake Chamber as well as solar winds. Also the Beta Strippers in different location throughout the system will be sending the electrons they extract back to the beta storage chamber. There shouldn't be a shortage of electrons. Positrons can sometimes be derived from the radioactive material placed in the Intake Chamber or as mentioned earlier from the proton-proton reaction and is stored in its designated chamber.

The last particle mentioned here are anti-protons. They may not have as wide of use as the other primary particles but keeping them around might prove useful at some point. In space you must be prepared for the unexpected. By diverting protons into the 3rd small apparatus at the bottom middle of the page under the neutron generator into a Copper plate we can derive anti-protons. Subsequently there may be the release of other particles from this interaction. We may get electrons, muons, and tauons, which are basically "fat electrons" and are negative in charge and are several times more massive than an electron. Those will all be directed to the beta minus chamber. There may be a gamma burst in the apparatus and possibly somewhere in the particle transfer conduit as they disintegrate on the way to storage.

Next there is the Discharge Chamber where energy will be used for propulsion or other needs not necessarily related to space travel depending on what this system is intended for. In the detonation chamber we can do about 3 things: fission, fusion, or antimatter annihilation. We'll start with fusion. The particles we will want to fuse will be deuterons because they are the easiest. This is seen due to the fact the particles tend to radiate from a substance in chunks called alpha particles and rarely if ever will you see a single proton radiate from a substance. Two protons and two neutrons seem to be a very stable and "preferred" unit of atomic mass. So it would seem that fusing deuterons would be best. In this method we will fuse deuterons without any electrons, which should make the process even easier. Here's how it works. Once deuterons have been collected they will be channeled to the cyclotrons seen in the lower left of the page, marked ${}_1d^1$. They will cycle there until needed. When it is time to use the deuterons the cyclotron will cycle them to appropriate energies. Then we will channel positrons and electrons to the adjacent cyclotrons until enough is ready. A positron and an electron will be sent into the chamber while two deuterons will be sent to the same location. Correctly timed the positron and electron will annihilate creating enough energy for the deuterons to fuse. With the energy from the cyclotron the deuterons should have enough pressure and energy from the positrons to fuse. As mentioned earlier the electron/positron pair is the kick-off energy needed to start the reactions. It may be possible to allow proceeding deuterons to fuse using the energy from the initial discharge. Or it maybe be necessary to continue to use positrons and electron to sustain the reaction. You may notice that it may also be possible to use the electro/positron annihilation discharge itself as a source of energy alone. It would depend on which is easier to make and which is more abundant between positrons and deuterons.

For antimatter, if enough can be found or made they can be stored in the appropriate cycler/capacitors and sent into the discharge chamber in the same way as the electron/positron pair. Now we'll take a look at using this system with fission. We saw that Radon gas or bare Uranium nuclei can be made and stored in the Particle Modification Tanks. Let's say we have placed Uranium 238 into a Manual Input Port. We will have the electrons stripped from the Uranium and the bare nuclei channeled to the top cyclotron located above the Discharge Chamber. It is thought that bare Uranium nuclei will fission easier than whole Uranium atoms. There won't be 92 electrons to get in the way. When enough Uranium nuclei are accumulated they will be sent into the chamber having been adjust by the flow regulator seen below the cyclotron. The mini conduits seen at the bottom left of the page, which looks like a shower spraying water is where neutrons that have been on standby in the two capacitors just above the particle prisms, will spray into the Uranium nuclei and induce fission. There may be more multiple fissions of the byproducts such as Krypton and Boron if the neutron shower is of sufficient quantity and this could serve as a type of turbo function for the engine.

Radio/Emitter

This is an emission device, which will have several conduits leading from the main reservoir bleed-offs that deliver particles and power to the emitter apparatus. It will possess all the standard needs a space craft will require for emitting energy including that carrying communication. This is an export device meaning it usually only releases energy, particles, and signals. Some of the abilities will include but not be limited to the following: RF radiation (radio), electromagnetic emission, x-ray emission, gamma emission, optical rays, magnetic discharge, and thermal discharge. The emitter is designed to release particles not only in beams, rays, or pulses but also specific configurations such as flush, flat, looped, curved or circular particle emissions. In space such abilities may come in handy.

Sensor/Particle Scoop

This apparatus is opposite in function from the Radio/Emitter in that it is an intake device. Not only will it be designed to receive many standard and unorthodox types of radios, signals, and emissions for the use of communication or detection, it also serves as a particle scoop to deliver to the main reservoir.

Shielding

This is certainly a crucial development for space fairing vehicles. The type of shielding required for adequate protection and defense is important. The following are only some of what is known to be needed for a outer space vessel: A strong magnetic field encompassing the ship to deflect positive and negatively charged particles, a defense against EMP shockwave be it natural or unnatural, heat shielding possibly by way of a highly reflective hull, and kinetic incident. The last shielding is probably experimental but is still imperative to acquire. Kinetic incident shielding simply means defense against

hard bodies typically small in size such as stones, pebbles and dust. At current it is not know whether a field or force can be used easily to deflect solid objects without damaging the vessel wielding it. This would however be a great help in combination with the Sensor/Scoop, which will be designed to detect the smallest particles at the greatest distance for early warning, to prevent hull impacts and breeches.

Air Recycler

Using some of the same components seen inside the main particle reservoir a new and better air recycling system can be utilized for permanent breathable air. Here's how it works. In the middle right diagram the air recycler is seen and begins with the arrow pointing down into an intake. This is where used air enters. The first treatment is to pass the used air through a Betastripper that will separate the electrons from the nuclei of the gasses that pass through. The electrons will be forwarded to a Variable Splitter to distribute them to three places: A battery, and two adjacent Betanizers farther into the system. While those electrons are being sent there the bare nuclei liberated from its original atomic structure are forwarded to a series of Polar Pushers that will divert specific nuclei to another location in the system. We can guess that used air contains at least the following: Carbon Dioxide, water, Oxygen, Nitrogen, and perhaps some proteins, enzymes, and other biological molecules. Naturally the machine will redirect the Oxygen, Nitrogen, and Hydrogen to the same Betanizers that the stripped electrons were sent to earlier. The remaining nuclei from the "contaminates" in the air such as the Carbon, Sodium, Chlorine, etcetera will be exported to another system that may be able to use it or reatomize it for another purpose, or if there is excess it can be dumped. It will be highly radioactive altogether so it must be safely discarded.

So the Oxygen, Nitrogen, and Hydrogen have reconvened with the normal amount of electrons in the Betanizer and is now back in atomic form. They will now be transferred to the holding tanks for use. This air will be 100% pure and cannot get any cleaner. In fact the air will be so pure that it might be too dry to breath, which is why the Hydrogen was saved and be sent to the Atom fuser farther in the system to join with Oxygen, and reformed into water. Some of that water will be sent to a humidifier that will mix it in the air tanks. As we can see this system also produces pure water and liquid Human waste can be sent to this system as well to go through the same process as the used air.

There will no doubt be an excess of electrons so again the machine is providing another export, electricity. Some was sent to the battery nearby that supplies the humidifier and temperature regulator for the air and water tanks to make sure they are not too cold or hot. If there are still excess electrons they will be sent to the main reservoir or other batteries on the ship.

Standard Space Environmental Suit (SES)

This new space suit design is remarkably simpler than current models. Located in the upper right middle of the diagram the SES is outstanding mainly because it consists of only two pieces, the body and the helmet. No glove removal or torso separations are necessary. The idea is to make the suit a tighter fit on the human body and is more like armor than suiting. The forearms, humorous, thigh, and shins are surrounded by the armor leaving only joints and bendable body parts uncovered. However the armor is on top of a flexible metallic fabric. Under the metallic fabric is where the traditional silicon rubber layer will be for air seal. On the skin of the armor you will see what looks like tiny mushrooms. That is the very outer layer. The caps of the mushrooms are a highly reflective material such as Chromium. The stems of the mushrooms are made of a low heat conducting material incase the mushrooms get too hot which will probably not happen often. The stems will be mounted in a choice material perhaps a thin layer of steel or titanium. At this point an apt engineer might ask, "Well what if you are in this suit and you are immersed in a hot atmosphere or liquid which can get around the mushroom caps and heat the base material?" As can be seen in the diagram the layer under the steel or titanium layer is another set of low heat conducting stems for that reason. After the second set of stems will be a layer of lead. Now a layer of lead this thin won't shield very well from very high-energy radiation such as gamma but it will be enough for the first two types of radiation, alpha and beta which will be stopped anyways by the layers above that. Nonetheless, some lead is better than no lead.

So how do you get into the suit? On the diagram you'll see a line going down the center of the chest to the waist. That is where divide is. The term is "split to fit." One simply pulls the suit sideways separating the torso laterally but the suit stays attached near the navel and at the lower back. One will slide into it like a jumpsuit. The suit will be very hard and unlikely to bend or dent easily but for added safety notice in the middle where the divide is you'll see parallel lines running to the navel. Those are raised impact rails so the divide will be protected from any impacts. One would be very safe inside this suit.

Now we have the helmet. The helmet is a little smaller than traditional space suits and will be more fitting of the head of the individual. This helmet works like a clamshell and closes around the head and face to clamp shut on the suits neckpiece. A simple wing nut or latch will be enough to secure the hold. The helmet holds the torso part of the suit together by the neck in addition to any latches already locked on the body of the suit. It may be possible to provide a mechanism that will allow the head to turn. If this were not possible then a stationary helmet would still be tolerable. There will be a glass see-through window as used on classic suits but this suit will employ a closable opaque visor made of the same armor as the rest of the suit. But it will use a special peephole technology. I first observed this special peephole when I worked at a fast food restaurant. The back supply delivery door I noticed had what looked like a window, which was about as wide as my eye width. However on the other side there was only a small peephole. On the glass window on the inside the image of the outside was visible as if it were a screen. Yet, there were no electrical parts and it was completely optical. Somehow the light entering the peephole from the outside was transferred through lenses and mirrors perhaps and the light was widened and overlaid on the special glass material making a clear image. This all happened within the width of the door. So in this light, the space suit visor can use a similar method of seeing with the visor closed. It is better than using an LCD screen which at such a close distance to the eyes will be difficult to use. The individual pixels would be visible like looking at a television screen too closely. Using the optical effect found in this special peephole a clear non-electrically generated image can be show in front of the eyes. That's the basics of the Standard SES. As far as air is concerned a scaled down version of the air recycler seen below the suit diagram would provide a permanent breathable atmosphere provided those components could be made small enough.

Vessel Interior

As quaint as this space ship design is by comparison to other craft in use this has a purpose behind its construction. This is not the design of a master engineer. But if possible the entire vessel is made out of a cast mold of material and broken into two halves and held together and cushioned at the joints. This is incase the vessel is impacted by something or crash lands. The separation will absorb some amount of shock and give the vessel greater all around integrity. First we.ll begin with the cockpit. There are to be no static windows unless required. The entire control room will utilize a low powered panoramic projection display of what is outside. The hull can be made to open like the visor on the SES helmet incase it becomes necessary to do so such as in the event of a screen malfunction. There will also be armored viewing portholes at different points on the ships hull. In fact the basic idea behind this vessel design is to go classic. There will be as minimal as possible of electronically operated parts. For example doorways, thrust initiators, and manual controls will be as mechanical as possible. It will be similar to a submarine using more levers and servomechanisms than chips and motors. As fun and fancy as those things are the chance of system and electrical failures are notable. Only where it is absolutely necessary will electric and automatic functions be used. Unfortunately the lovely flat panel interface buttons seen on science fiction media should not be used or should have a removable feature in an emergency or failure. Raised, sturdy button panels should be available. The middle compartment is a large airlock with wide side doors for releasing and obtaining objects and cargo. A transparent booth in the corner accessible from the bypass corridor and operation controls is present. A top and bottom hatch should be available. To combat the psychological effects of long term space travel, provided gravitational plating can be used, the living quarters will be made to look like a typical living room seen in any modern home: carpeted, coffee tables, televisions, kitchen, dining area, and bedroom will be available with standard appliances. This will go along way of easing space sickness it is believed. Dull mechanical environments with pipes and metal and such are not too pleasant for most for long periods of exposure. At the bottom of the page you.ll see a dissection of the elongated engine. The particle cyclotrons inject particles into the conduit on its way to the detonation chamber. The conduit is actually separated into two parts one able to slide around the other like a trumpet horn pipe so when the particles ignite in the chamber they will push it forward a bit to allow a certain leeway and the use of shock resistant hydraulics. The mouth of the chamber is wide to allow much of the energy to escape to prevent from melting the chamber. The same goes for the discharge mitt design which is like a plate with two holes in the center for releasing particles that detonated a certain distance from the mitt which will catch the discharge energy to provide thrust.
