

50th Anniversary of Space and Missiles

“Pluto and Beyond”

by David Sindel

If I were to have the opportunity to travel to another planet, I would choose to roam to the outer solar system, visiting Pluto, Sedna, and other denizens of the mysterious Kuiper Belt before returning home to mother Earth. For the past 13 months all aspects of space have intrigued me, from the farthest quasars literally millions and millions of light years distant to auroras and meteors just miles above in the atmosphere, but none so much as our own solar system, with likely none so wonderful and puzzling as the worlds beyond Neptune known as the Kuiper Belt.

The Kuiper Belt is one of the newest areas of planetary research, and this makes it all the more exciting. With the first, Pluto, found in 1940, and none more until its moon Charon in 1979, this area is a place dominated by recent discoveries, with much more to be explored and discovered.

At -377° , this is a cold but amazing place!

I would travel in a craft likely similar to my fictional but feasible MKT(Manned Kuiper[belt] Transport)-1. At the front is a 4-meter-diameter spinning wheel creating $1/3$ gravity for exercise to lessen bone loss, with

behind it the main living quarters. Almost all parts are cylindrical to facilitate launch with small launch systems, then are assembled in orbit instead of a costly whole-spacecraft launch. In attached bays are two probes that can be launched to Pluto or other objects, then return to the ship with measurements and pictures; and shuttles used for extravehicular activity and, if ever needed, transport to Earth in case of severe illness. The antenna, doubling as a radio telescope, is mounted behind. Mounted outrigger to the living area are two pods containing fusion engines for electricity and motion and their hydrogen fuel, with another hydrogen tank connecting them. The 100-meter long ship looks unusual but is a very good design.

The MKT-1 will have a crew of four. This will keep food, water and oxygen supplies needed to a reasonable amount while having enough crew to prevent loneliness, run the ship, and carry out research. Accompanying me will be a maintenance, communications, and probe control expert, and two planetary researchers /geologists specially picked for the mission. We will meet well beforehand to make sure no conflicts or fights will arise.

Arrive is a relative term, for on the journey we arrive at many places, but some stand out: About 36 hours after launch, a lunar flyby will sling us towards Jupiter, then the giant planet's gravity added to a 15 minute engine

burn will accelerate us into a retrograde, 42 AU from the sun circular orbit with a 4-year period. This will allow visiting of many Kuiper Belt objects within a reasonable time period while, by having large propellant tanks and using Jupiter's gravity, will leave enough fuel to maneuver and make the journey sunward to home. Pluto will be the first stop about one year after launch. We will orbit around it for two weeks, gathering information and pictures and sending probes to the surface. After this visit, we will head out to the L2 Lagrange point for a 3-day study of Charon; then use the Kuiper Belt kingpin's gravity added to our own engines to accelerate us to an encounter with newly discovered Sedna. After this we will have the choice to extend the mission several months to visit another minor planet or to return to the mother planet.

The MKT-1 would be an entirely self-contained world, recycling 98 to 99% of water, et cetera. The fusion engines mentioned earlier supply all electricity for heating, lighting, and the like. The atmosphere is 77% nitrogen, 22.9% oxygen, and 0.1% carbon dioxide at 68% sea level pressure, therefore 10 psi in the ship. The very modern computer system will be able to diagnose and treat most illnesses, but in the tiny (<0.1%) chance a very serious illness comes up, all afflicted will quickly return to earth on the high speed (5% light speed max) shuttlecraft. Any lack of suitable entertainment

would result in serious morale problems, so the MKT-1 is well equipped. Two small telescopes for personal enjoyment and stargazing are kept in a red-lit room constantly in the ship's shadow. Favorite targets would include the [properly filtered] sun, the gas giant planets (when not in solar conjunction), and the KBO's ahead, particularly Pluto, as well as many favorite earthly stargazing targets. Other pastimes include reading and board games, the latter a favorite during the daily sessions in the gravity wheel.

The journey of the MKT-1 will have a tremendous benefit to mankind. Our knowledge of the Kuiper Belt will increase tenfold. With images and data from three trips by probes to the surfaces of Pluto, Charon, and Sedna, plus data from the ship, it will literally take decades to process the works of MKT-1.

Getting home will be a splendid use of the enormous gravity of planets and asteroids. After maneuvering out of orbit, the ship will use encounters with several centaurs and possibly a major planet to speed up the journey to earth by a total of a month. After arriving in Earth orbit, we (the crew) will head to the surface in the shuttlecraft. The interplanetary craft will lie in wait for years until a new crew boards, and humans again voyage across the planets...or the stars.