Resupply Mission

7 Feb: I've decided to keep a journal. I probably won't make daily entries because not that much happens every day, but I may want to write about this mission someday, or at least tell others about it, and it would be nice to have some notes. Plus, I have a lot of time and not much to do. I have daily system checks, reports to Mission Control, and other duties, but those don't fill the entire day. The ship is well stocked with videos, books, music, games, etc., but if I spend my entire day just being entertained I don't feel like I'm accomplishing anything. I can always talk to Mission Control, but they're busy with other things so I don't want to call just to chat. I spent the last five years training for this flight and for my year on Mars, but the people I trained with are still in training and they don't have time for idle chit-chat either. The training was so intense that I never had time to mix with people outside the program, and after a year or so I had very little in common with them anyway. I suppose if I had a wife and kids I'd have someone to talk to but, well, I guess I'll just have to talk to myself through this journal.

I wasn't supposed to go to Mars for another year. That's when four of us were going on a scheduled rotation. But Ted got sick, and I was scheduled to be his replacement next year. This flight was scheduled as a resupply mission, but they pulled enough non-critical items off the shuttle to accommodate my weight so here I am. When I get into orbit around Mars Ted will come up on the Mars hopper. We'll load the supplies on the hopper, and I'll take it down to the planet while Ted takes the shuttle back to Earth.

The crew quarters were designed for four people, so I've got a lot of room. It's a good thing, too. The ship is crowded with four – I know that from the simulator. It's going to be a long, dull, eight-month trip to Mars, so I appreciate the extra space.

Ever since I was a kid I've dreamed of being an explorer. Being the first to go someplace or do something exciting. I'm hardly the first person to go to Mars. I guess technically I'm the first person to make a solo interplanetary trip, as all previous trips to Mars have had a full crew, but I'm just a passenger on a resupply mission so I don't think I'll make it into history books. On the other hand, just going into space is an experience most people never have. It seems routine to me, as I made several trips during my training, including one trip to the moon. I was still in the Earth's orbit when I went to the moon, though. Three days ago I left Earth's orbit on this trip, and that's a new experience for me.

9 Feb: Earth is a beautiful planet. Blue seas, green and brown land, and swirls of white clouds form an ever-changing pattern of colors. I've seen it from space before, from orbit and from the moon, but somehow it seems even more beautiful now. It's a beauty tinged with sadness, though, as it grows noticeably smaller every day. I can clearly see both the earth and the moon

at the same time. The moon is a brilliant contrast of light and dark, but it looks dead compared to the colorful Earth, teeming with life. My ship is slowly rotating to equalize temperature and radiation exposure, so sometimes my view includes the Earth, and sometimes I just see a vast expanse of stars.

I talked to my teammates who are still in training today. They were excited to hear how I was doing, and of course I was excited to hear all the latest gossip.

4 Mar: I performed the first monthly review of all the ship's systems today. Everything seems to be performing perfectly. The water recycling system is working at 100%, as is the oxygen recycler. It's amazing how that algae can turn the ship's waste (OK. Let's be candid. My waste.) back into oxygen and water. All it takes is heat and light from the ship's reactor, and they tell me the reactor will still be working long after I die of old age.

The doctors reviewed all my medical data and gave me a clean bill of health. No noticeable loss of bone mass or muscle. I've been using the spring "weightlifting" machine and aerobic bicycle religiously – significantly more than the minimum because there's not much else to do around here.

The Earth looks tiny from here, and I can only catch occasional glimpses of the moon.

13 Apr: The ship executed a minor course correction today. I was on the horn with Mission Control the whole time in case something went wrong and I had to manually override the system, but everything worked flawlessly. So far I've just been a passenger, and that's fine with me. I'll be perfectly happy if all the training I've had on manual control turns out to be wasted. Mission Control says this has been a textbook flight, and we may not need any more corrections until we slow down to orbit Mars.

4 Jun: Midway. Today the Earth is as far behind me as Mars is ahead of me. They both just look like tiny spots of light against the blackness of space. The Earth looks a little brighter because it's bigger. It has a bluish tinge while Mars looks reddish. I talked to my teammates again today, but it was a short conversation. I didn't have anything new to tell them, and I've sort of lost touch with whatever is happening on Earth. There was a noticeable delay in our conversation, as it took about two minutes for my words to reach Earth or for their words to reach me. It will be twice as long when I get to Mars.

7 Jul: I woke up to a jolt, a loud "bang," and alarm buzzers. Those aren't things you want in a spacecraft. I did a quick check of the critical life support systems, and they all look fine. The alarms were for "Communication Systems" and "Navigation Systems." I tried to contact Mission Control but couldn't reach them. More thorough checks reassured me that there were

no leaks in the pressure hull, the reactor was normal, and the malfunctions seemed to be limited to the communication and navigation systems. I tried multiple resets and switching over to backup systems, but with no luck.

I dispatched an EVA drone to survey the ship from the outside. I could monitor its progress with no problem, so short range communications are still working. Most of the ship looked fine, but the main communication antenna was completely torn off. A few small pieces of it were caught in the mangled remains of the backup antenna. My guess is that a small piece of space debris, probably a chunk of asteroid, grazed the ship at the perfect angle to take out both antennas. A one-in-a-million shot. In hindsight I can see that both antennas should not have been located on the same side of the ship. If I would report it to Mission Control as a ”lesson learned” if I could talk to them. More bad luck - the window for the celestial navigation system was located near the backup antenna. It was smashed, either by the space rock or by pieces of the primary antenna. In any event, that’s what caused the navigation system alarm.

9 Jul: After two days of poring through manuals, procedures, checklists, and wiring diagrams I’m convinced there are no more backups for the comm or nav systems. The computer told me that at the outset, but I wasn’t ready to give up hope until I’d exhausted every possibility. The two antennas that were smashed were the primary and backup antennas for long range communications. Technically the short range communication system is a third backup, but it’s only designed to communicate with nearby spacecraft. The primary navigation system is the onboard INS – the inertial navigation system. It is essentially a highly refined form of “dead reckoning,” calculating the current position, speed, and direction based upon the last known values and any deviations it has detected since then. The primary way to update it is by long range communications from monitoring systems on Earth or Mars. The celestial navigation system was the backup. I’ve lost both.

There is now no way to update the INS. This doesn’t mean I’m wandering aimlessly in space. The INS is pretty accurate. It will track my progress toward Mars, make course corrections as required, and when we reach the planet it will slow down the ship until we’re in orbit. Then the team on Mars will send the hopper up to rescue me. The plan was for the hopper to also refuel this ship for the trip back to Earth, but I doubt they’ll do that because I don’t think they have any way to repair this ship in orbit. Ted will have to wait for the next shuttle to return to Earth. They may have already launched another shuttle to get him, or they may be trying to reestablish contact with me to find out what’s wrong with this shuttle.

12 July: I’ve been trying to use Morse Code to let the folks on Earth know I’m still alive. I’ve tried switching the comm system on and off, dot-dot-dot, dash-dash-dash, dot-dot-dot in case the carrier wave can be detected by an antenna array on Earth. I was hoping they could use an

array to send a strong enough response that I could pick it up on what's left of my backup antenna, but no luck so far. I've also tried switching the cabin lights on and off in an SOS pattern whenever the window faces Earth, hoping one of the telescopes on the planet, in orbit, or on the moon could detect it. I know that's a long shot, and there's no way they could send a response if they did see it, but I feel compelled to let someone know I'm still alive. Thank God the computer talks to me. I'm bonding with the ship. I'm beginning to see why Lindberg titled his book "We."

17 July: I've given up trying to signal Earth. If it was possible for them to detect my signals, they've already detected them. If not, it's useless to try because I'm only getting farther and farther away. I'll try to signal Mars when I get close. They don't have the big antenna arrays that Earth has, but I'll be a lot closer to Mars.

9 Aug: No changes. Day after day of drifting through space. No one to talk to. No one even knows if I'm alive or dead. I think the INS is keeping me on track, but I have no way of knowing. By the time I reach Mars we will have travelled nearly 20 million miles with no update. Even a tiny error can lead to a catastrophic miscalculation over that distance. And how much did the collision with the space debris affect our path? Did the INS accurately sense that impact and correct for it? If we approach Mars higher or faster than the INS thinks we are, it won't slow us down enough. We'll skip off the thin atmosphere of the planet and shoot off into space. Forever. The INS will detect that, but it will be too late to do anything about it. We don't have enough fuel to reverse course and try again. And if we're lower or slower than the INS thinks, it will slow us down too much. Instead of orbiting, we'll crash into the surface of the planet.

18 Aug: Reactor, air recycling, and water recycling are all working flawlessly. Since this was a resupply mission, I've got a year's supply of food for forty people on board. If I don't succeed in getting into orbit around Mars, that would be enough to last me forty years. Probably longer, since people don't eat as much in zero-G as they do when they're fighting gravity all day long. But do I want to face 40 years in space? With nothing to do? No one but the computer to talk to? And no hope?

4 Sep: One month of uncertainty left until the day of reckoning. I checked the ship's medical supplies. I've got enough pain killers to make certain I won't have to face 40 years of loneliness.

19 Sep: Mars looks huge. I've started sending SOS signals with my broken comm system several times a day. No reply, or at least, none that I can receive. I've also started flashing the cabin lights in case they can see them.

1 Oct: I've gone over the checklist for entering orbit so often the pages are wearing out. Everything should be automatic. The INS should orient the ship for retro fire and fire the

rockets just long enough to put us into orbit. If necessary, I can override the system and fire the rockets manually. I did that many times in the simulator back on Earth. The difference is that on Earth I was simulating a failure of the automatic controls. The computer or a ground controller told me when to fire the rockets and for how long. They ran me through a couple simulations where they had me manually fire the rockets based solely on visual estimates of my speed and altitude, just to teach me to trust the computer. Every time I tried to rely on my own eyes I either skipped off or crashed into the surface.

4 Oct: It's done. The INS oriented the ship and fired the rockets. I was nervous because it seemed to me that it waited too long, but just when I was about to override it, it fired. It also seemed like it only fired the rockets for a short time. I had my hand on the joystick the whole time, but I resisted the urge to override the system and extend the burn because every time I did that in the simulator, I crashed.

5 Oct: Mars looks like it's getting farther away. It looked like we were orbiting at first, but now it looks like it's farther away. Maybe we're in an elliptical orbit. The hopper can pick me up when we return to the perigee.

6 Oct: Mars is definitely receding in the distance. We could still be in an elliptical orbit, but I'm losing hope. I wish I'd overridden the computer and fired the rockets manually when I had the chance. Crashing into the surface would have been better than sailing off into space.

18 Oct: Still receding. If we're in an elliptical orbit, it's period is 28-days or longer. That's as long as it takes to moon to circle the Earth. The Earth's a lot bigger than Mars, and the moon's a lot bigger than this ship. I don't think Mars has enough gravity to orbit us this far out, and the INS says we're not slowing down or turning. I'm afraid we just hooked around Mars and are now shooting into space.

1 Nov: It's amazing how long it takes for hope to die. I knew a few hours after we fired the rockets that we weren't orbiting Mars, but I refused to believe it. I kept telling myself we might just be in an elliptical orbit. We're not. I don't think I can face eternity in space. This may be my last entry.

12 Nov: Despair has been replaced with acceptance. I've had the pills in my hand several times, but I always thought "Do I really want to do this?" I'm not sick. I'm not in pain. I've got plenty of air, water, and food. I've also got a lifetime supply of books, videos, and other entertainment. And I'm beginning to enjoy talking to the computer. It's no substitute for a human friend, but it's surprisingly intelligent. Maybe Mission Control can send a rescue mission. Maybe it's already on its way. It would be a shame if they came all this way only to find I'd already checked out. Maybe I'll never again see another human being, but I will see

sights no other human has ever seen. I always wanted to be an explorer, and now I am one. Who knows how far this journey will take me? I may not make it through the asteroid belt, but then again, I may leave the solar system. Like Voyager. Whatever happens, it will be the experience of a lifetime.

