CHAPTER 9

LOG ENTRY: SOL 79

It's the evening of my eighth day on the road. Sirius 4 has been a success so far.

I've fallen into a routine. Every morning I wake up at dawn. First thing I do is check oxygen and CO_2 levels. Then I eat a breakfast pack and drink a cup of water. After that, I brush my teeth, using as little water as possible, and shave with an electric razor.

The rover has no toilet. We were expected to use our suits' reclamation systems for that. But they aren't designed to hold twenty days' worth of output.

My morning piss goes in a resealable plastic box. When I open it, the rover reeks like a truck-stop men's room. I could take it outside and let it boil off. But I worked hard to make that water, and the last thing I'm going to do is waste it. I'll feed it to the water reclaimer when I get back.

Even more precious is my manure. It's critical to the potato farm, and I'm the only source on Mars. Fortunately, when you spend a lot of time in space, you learn how to shit in a bag. And if you think things are bad after opening the piss box, imagine the smell after I drop anchor.

After I'm done with that lovely routine, I go outside and collect the solar cells. Why didn't I do it the previous night? Because trying to dismantle and stack solar cells in *total darkness* isn't fun. I learned that the hard way.

After securing the cells, I come back in, turn on some shitty seventies music, and start driving. I putter along at 25 kph, the rover's top speed. It's comfortable inside. I wear hastily made cutoffs and a thin shirt while the RTG bakes the interior. When it gets too hot I detach the insulation duct-taped to the hull. When it gets too cold, I tape it back up.

I can go almost two hours before the first battery runs out. I do a quick EVA to swap cables, then I'm back at the wheel for the second half of the day's drive.

The terrain is very flat. The undercarriage of the rover is taller than any of the rocks around here, and the hills are gently sloping affairs, smoothed by eons of sandstorms.

When the other battery runs out, it's time for another EVA. I pull the solar cells off the roof and lay them on the ground. For the first few sols, I lined them up in a row. Now I plop them wherever, trying to keep them close to the rover out of sheer laziness.

Then comes the incredibly dull part of my day. I sit around for twelve hours with nothing to do. And I'm getting sick of this rover. The inside's the size of a van. That may seem like plenty of room, but try being trapped in a van for eight days. I look forward to tending my potato farm in the wide open space of the Hab.

I'm nostalgic for the Hab. How fucked up is that?

I have shitty seventies TV to watch, and a bunch of Poirot novels to read. But mostly I spend my time thinking about getting to Ares 4. I'll have to do it someday. How the hell am I going to survive a 3200-kilometer trip in this thing? It'll probably take fifty days. I'll need the water reclaimer and the oxygenator, maybe some of the Hab's main batteries, then a bunch more solar cells to charge everything.… Where will I put it all? These thoughts pester me throughout the long, boring days.

Eventually, it gets dark and I get tired. I lie among the food packs, water tanks, extra O_2 tank, piles of CO_2 filters, box of pee, bags of shit, and personal items. I have a bunch of crew jumpsuits to serve as bedding, along with my blanket and pillow. Basically, I sleep in a pile of junk every night.

Speaking of sleep…G'night.

By my reckoning, I'm about 100 kilometers from *Pathfinder*. Technically it's "Carl Sagan Memorial Station." But with all due respect to Carl, I can call it whatever the hell I want. I'm the King of Mars.

As I mentioned, it's been a long, boring drive. And I'm still on the outward leg. But hey, I'm an astronaut. Long-ass trips are my business.

Navigation is tricky.

The Hab's nav beacon only reaches 40 kilometers, so it's useless to me out here. I knew that'd be an issue when I was planning this little road trip, so I came up with a brilliant plan that didn't work.

The computer has detailed maps, so I figured I could navigate by landmarks. I was wrong. Turns out you can't navigate by landmarks if you can't find any god damned landmarks.

Our landing site is at the delta of a long-gone river. NASA chose it because if there are any microscopic fossils to be had, it's a good place to look. Also, the water would have dragged rock and soil samples from thousands of kilometers away. With some digging, we could get a broad geological history.

That's great for science, but it means the Hab's in a *featureless wasteland*.

I considered making a compass. The rover has plenty of electricity, and the med kit has a needle. Only one problem: Mars doesn't have a magnetic field.

So I navigate by Phobos. It whips around Mars so fast it actually rises and sets twice a day, running west to east. It isn't the most accurate system, but it works.

Things got easier on Sol 75. I reached a valley with a rise to the west. It had flat ground for easy driving, and I just needed to follow the edge of the hills. I named it "Lewis Valley" after our fearless leader. She'd love it there, geology nerd that she is.

Three sols later, Lewis Valley opened into a wide plain. So, again, I was left without references and relied on Phobos to guide me. There's probably symbolism there. Phobos is the god of fear, and I'm letting it be my guide. Not a good sign.

But today, my luck finally changed. After two sols wandering the desert, I found something to navigate by. It was a five-kilometer crater, so small it didn't even have a listed name. But it was on the maps, so to me it was the Lighthouse of Alexandria. Once I had it in sight, I knew exactly where I was.

I'm camped near it now, as a matter of fact.

I'm finally through the blank areas of the map. Tomorrow, I'll have the Lighthouse to navigate by, and Hamelin crater later on. I'm in good shape.

Now on to my next task: sitting around with nothing to do for twelve hours.

I better get started!

LOG ENTRY: SOL 81

Almost made it to *Pathfinder* today, but I ran out of juice. Just another 22 kilometers to go!

An unremarkable drive. Navigation wasn't a problem. As Lighthouse receded into the distance, the rim of Hamelin crater came into view.

I left Acidalia Planitia behind a long time ago. I'm well into Ares Vallis now. The desert plains are giving way to bumpier terrain, strewn with ejecta that never got buried by sand. It makes driving a chore; I have to pay more attention.

Up till now, I've been driving right over the rock-strewn landscape. But as I travel farther south, the rocks are getting bigger and more plentiful. I have to go around some of them or risk damage to my suspension. The good news is I don't have to do it for long. Once I get to *Pathfinder*, I can turn around and go the other way.

The weather's been very good. No discernible wind, no storms. I think I got lucky there. There's a good chance my rover tracks from the past few sols are intact. I should be able to get back to Lewis Valley just by following them.

After setting up the solar panels today, I went for a little walk. I never left sight of the rover; the last thing I want to do is get lost on foot. But I couldn't stomach crawling back into that cramped, smelly rat's nest. Not right away.

It's a strange feeling. Everywhere I go, I'm the first. Step outside the rover? First guy ever to be there! Climb a hill? First guy to climb that hill! Kick a rock? That rock hadn't moved in a million years!

I'm the first guy to drive long-distance on Mars. The first guy to spend more than thirty-one sols on Mars. The first guy to grow crops on Mars. First, first, first!

I wasn't expecting to be first at anything. I was the fifth crewman out of the MDV when we landed, making me the seventeenth person to set foot on Mars. The egress order had been determined years earlier. A month before launch, we all got tattoos of our "Mars numbers." Johanssen almost refused to get her "15" because she was afraid it would hurt. Here's a woman who had survived the centrifuge, the vomit comet, hard-landing drills and 10k runs. A woman who fixed a simulated MDV computer failure while being spun around upside-down. But she was afraid of a tattoo needle.

Man, I miss those guys.

Jesus Christ, I'd give anything for a five-minute conversation with anyone. Anyone, anywhere. About anything.

I'm the first person to be alone on an entire planet.

Okay, enough moping. I *am* having a conversation with someone: whoever reads this log. It's a bit one-sided but it'll have to do. I might die, but damn it, someone will know what I had to say.

And the whole point of this trip is to get a radio. I could be reconnected with mankind before I even die.

So here's another first: Tomorrow I'll be the first person to recover a Mars probe.

LOG ENTRY: SOL 82

Victory! I found it!

I knew I was in the right area when I spotted Twin Peaks in the distance. The two small hills are under a kilometer from the landing site. Even better, they were on the far side of the site. All I had to do was aim for them until I found the lander.

And there it was! Right where it was supposed to be! I excitedly stumbled out and rushed to the site.

Pathfinder's final stage of descent was a balloon-covered tetrahedron. The balloons absorbed the impact of landing. Once it came to rest, they deflated, and the tetrahedron unfolded to reveal the probe.

It's actually two separate components. The lander itself, and the Sojourner rover. The lander was immobile, while Sojourner wandered around and got a good look at the local rocks. I'm taking both back with me, but the important part is the lander. That's the part that can communicate with Earth.

I can't explain how happy I was to find it. It was a *lot* of work to get here, and I'd succeeded.

The lander was half-buried. With some quick and careful digging, I exposed the bulk of it, though the large tetrahedron and the deflated balloons still lurked below the surface.

After a quick search, I found Sojourner. The little fella was only two meters from the lander. I vaguely remember it was farther away when they last saw it. It probably entered a contingency mode and started circling the lander, trying to communicate.

I quickly deposited Sojourner in my rover. It's small, light, and easily fit in the airlock. The lander was a different story.

I had no hope of getting the whole thing back to the Hab. It was just too big, but I only needed the probe itself. It was time for me to put on my mechanical engineer hat.

The probe was on the central panel of the unfolded tetrahedron. The other three sides were each attached to the central panel with a metal hinge. As anyone at JPL will tell you, probes are delicate things. Weight is a serious concern, so they're not made to stand up to much punishment.

When I took a crowbar to the hinges, they popped right off!

Then things got difficult. When I tried to lift the central panel assembly, it didn't budge.

Just like the other three panels, the central panel had deflated balloons underneath it.

Over the decades, the balloons had ripped and filled with sand.

I could cut off the balloons, but I'd have to dig to get to them. It wouldn't be hard, it's just sand. But the other three panels were in the damn way.

I quickly realized I didn't give a crap about the condition of the other panels. I went back to my rover, cut some strips of Hab material, then braided them into a primitive but strong rope. I can't take credit for it being strong. Thank NASA for that. I just made it rope-shaped.

I tied one end to a panel and the other to the rover. The rover was made for traversing extremely rugged terrain, often at steep angles. It may not be fast, but it has great torque. I towed the panel away like a redneck removing a tree stump.

Now I had a place to dig. As I exposed each balloon, I cut it off. The whole task took an hour.

Then I hoisted the central panel assembly up and carried it confidently to the rover!

At least, that's what I wanted to do. The damn thing is still heavy as hell. I'm guessing it's 200 kilograms. Even in Mars's gravity that's a bit much. I could carry it around the Hab easily

enough, but lifting it while wearing an awkward EVA suit? Out of the question.

So I dragged it to the rover.

Now for my next feat: getting it on the roof.

The roof was empty at the moment. Even with mostly full batteries, I had set up the solar cells when I stopped. Why not? Free energy.

I'd worked it out in advance. On the way here, two stacks of solar panels occupied the whole roof. On the way back, I'll use a single stack to make room for the probe. It's a little more dangerous; the stack might fall over. Also, the cells will be a pain in the ass to stack that high. But I'll get it done.

I can't just throw a rope over the rover and hoist *Pathfinder* up the side. I don't want to break it. I mean, it's already broken; they lost contact in 1997. But I don't want to break it *more*.

I came up with a solution, but I'd done enough physical labor for one day, and I was almost out of daylight.

Now I'm in the rover, looking at Sojourner. It seems all right. No physical damage on the outside. Doesn't look like anything got too baked by the sunlight. The dense layer of Mars crap all over it protected it from long-term solar damage.

You may think Sojourner isn't much use to me. It can't communicate with Earth. Why do I care about it?

Because it has a lot of moving parts.

If I establish a link with NASA, I can talk to them by holding a page of text up to the lander's camera. But how would they talk to me? The only moving parts on the lander are the high-gain antenna (which would have to stay pointed at Earth) and the camera boom. We'd have to come up with a system where NASA could talk by rotating the camera head. It would be painfully slow.

But Sojourner has six independent wheels that rotate reasonably fast. It'll be much easier to communicate with

those. I could draw letters on the wheels. NASA could rotate them to spell things at me.

That all assumes I can get the lander's radio working at all.

Time to turn in. I've got a lot of backbreaking physical labor to do tomorrow. I'll need my rest.

LOG ENTRY: SOL 83

Oh God, I'm sore.

But it's the only way I could think of to get the lander safely onto the roof.

I built a ramp out of rocks and sand. Just like the ancient Egyptians did.

And if there's one thing Ares Vallis has, it's rocks!

First, I experimented to find out how steep the grade could be. I piled some rocks near the lander and dragged it up the pile and back down again. Then I made the pile steeper and made sure I could drag the lander up and down. I repeated this over and over until I found the best grade for my ramp: 30 degrees. Anything more was too risky. I might lose my grip and send the lander tumbling down the ramp.

The roof of the rover is over two meters from the ground. So I'd need a ramp almost four meters long. I got to work.

The first few rocks were easy. Then they started feeling heavier and heavier. Hard physical labor in a space suit is murder. Everything's more effort because you're lugging 20 kilograms of suit around with you, and your movement is limited. I was panting within twenty minutes.

So I cheated. I upped my O_2 mixture. It really helped a lot. Probably shouldn't make that a habit. Also, I didn't get hot. The suit leaks heat faster than my body could ever generate it. The heating system is what keeps the temperature bearable. My physical labor just meant the suit didn't have to heat itself as much.

After hours of grueling labor, I finally got the ramp made. Nothing more than a pile of rocks against the rover, but it reached the roof.

I stomped up and down the ramp first, to make sure it was stable, then I dragged the lander up. It worked like a charm!

I was all smiles as I lashed the lander in place. I made sure it was firmly secured, and even stacked the solar cells in a big single stack (why waste the ramp?).

But then it hit me. The ramp would collapse as I drove away, and the rocks might damage the wheels or undercarriage. I'd have to take the ramp apart to keep that from happening.

Ugh.

Tearing the ramp down was easier than putting it up. I didn't need to carefully put each rock in a stable place. I just dropped them wherever. It only took me an hour.

And now I'm done!

I'll start heading home tomorrow, with my new 200-kilogram broken radio.