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## Tom Swift's — Spaceball

By T. Edward Fox

Following a few close calls at the Swift's Outpost in Space, station commander Ken Horton asks Tom to develop some sort of emergency evacuation vehicle.

Interestingly, Tom had been working on just that thing, prompted by his own brush with death at the station a few months earlier.

This is the story about the development and testing of that system and how it came in very handy just one day after installation.

This story is dedicated to me. That's right... me. I had a dream more than twenty years ago in which I started a company that created just this vehicle and helped save the lives of five astronauts at the ISS. I'm not bragging, I'm just telling you. In my dream I was a variation of Tom Swift. Maybe what I'm trying to say is that we all have a little Tom in us. In our dreams, we create amazing things. Too bad most of them never get built!

A SWIFT ENTERPRISES INVENTION BONUS

**Spaceball**

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## FOREWORD

There are a lot of inventions bandied around in science fiction stories that seem too far-fetched to ever be possible. Then, there are some that make you wonder why the heck nobody has already done something like that already.

I tend to put the invention in this story in that latter category. It makes good sense and seems practically doable. Even today. Even without Tomasite!

The only slight technical hitch might be shielding, but man has already made many wondrous materials that might do the trick. I say give the right people a little shove and we might see this in the near future.

And, I for one would love to see this as something available for the average—if you can classify them as average—daredevil who wants to have that ultimate adrenaline rush. I believe they should be chucked up into orbit, given one of these, and told to land wherever they like.

Good luck to them. I know a man who once said something very wise about fools and bird droppings being the only things that should fall from the sky. Maybe this would change even his mind.

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*Victor Appleton II*

**PART 1****What We Need Is...**

TOM SWIFT, young inventor, had just about fully recovered from his near death experience in space. It had been a many weeks-long road but he made it with only minimal visible and practically no lasting damage.

Amazing given that he had been in space, been hit in the back by a meteorite about the size of a pin head, had his suit ripped open in the back—where it had been impossible for him to even reach to try to hold it shut—and had been rescued by Ken Horton’s crack team of outside men, the Vacuum Monkeys.

Most physically fit people can survive a minute in the vacuum of space. Tom had been exposed to the icy cold and vacuum for two minutes and a further minute while the airlock was pressurizing. His back was frostbitten, a livid purple bruise that was still fading weeks later. The delicate alveoli or tiny sacs in his lungs had ruptured and he was unable to breathe on his own for more than two days.

But, here he was, walking to his office at Swift Enterprises, the four-mile-square facility built by his father a half dozen years earlier. He felt great and was enjoying the scents of the late-spring air. He had an immense appreciation for the saying, “It’s good to be alive!”

When he entered the office he shared with his famous

father, Damon Swift, Tom immediately saw the flashing icon on his computer screen indicating an incoming message had been received and was waiting for him to view it.

He sat down and deactivated his screensaver, a series of photographs of both him and his girlfriend, Bashali Prandit.

The message was from Ken Horton up at the outpost. It had only arrived about five minutes earlier.

*Would have been here if I had driven. Oh, well. Let’s see what he needs,* Tom thought as he keyed in the access sequence. The station commander’s message was an audio only one:

*Hey, skipper. Ken here. Listen. I know you’re just getting back to the job this week so don’t think you have to get right back to me. It is just that your recent... ah, incident up here has us all a little shaken. In fact, I’ll admit that we are feeling a little exposed, if you’ll forgive that image.*

Tom smiled. He owed his life to the men up in geostationary orbit. Whatever they might need or want, he would do what he could.

*Anyway, we had another small occurrence the other day. We were able to take care of everything up here thanks to the little infirmary Doc outfitted, but it all has us thinking. What if we are faced with something more dire? Like yours. I mean, even on the days when we have a supply rocket parked up here it would take a minimum of three hours to*

*unhook the capsule, get it docked to one of the spokes, load in an injured man, and then get it on its way back down. And, that doesn't include the four hours of drift and re-entry. That's seven hours, Tom. I hate to say it, but we're gonna lose someone one day. Possibly someone who could have been saved if we could get them down within an hour or so. What do you think? Give me a call when you have the time. Thanks. Out.*

Nothing Ken had said was anything that had not already gone through Tom's mind beginning back when the giant space wheel was being constructed.

He accessed some files in the computer and brought them on screen. Next, he called the communications Department and asked them to set up the necessary call.

"We'll have them on the line in five minutes, Tom," George Dilling, the head communications man told him.

While he waited, Tom reviewed his files once more. Very soon, his phone beeped three times. "Got them, skipper. You can pick them up on line five."

"Thanks, George." Tom pressed the button to open the line to the station. "Ken? It's Tom. I got your message."

"Hi, Tom. Sorry if I sounded a little frazzled. It's just that we had a near amputation the other day. Fred Boswell with the broadcasters group was outside trying to replace a short cable when the antenna he was working under swung over and got his left hand."

"How the heck did that happen, Ken?"

"Well, he leaned on the thing. What with having loosened the retaining bolt and all, over it went and just about took off his thumb and index finger. Two other men were out there and got him inside. Had a manageable glove tear but the big thing was the thumb was just about sliced through. I don't know about you, but I'd never sewn a man's hand up before. Isn't in my training. And, I hope I never have to do it again."

"Where is he now?" Tom inquired.

"Back dirtside. Went down late that afternoon with a supply capsule. You were still at home having Sandy and Bashalli and your mom taking care of you. Your dad knows all about it, though. Skipper? We really need a quick evacuation system. You know?"

"Yeah. I understand. The good news is, at least I hope you'll think it's good, I've already come up with a new emergency escape pod that I think will do the trick. Arv Hanson is supposed to have a completed full-size mockup of the thing by day after tomorrow. It is easier for you to come down than for me to haul the thing up there. Can you be here on Thursday?"

Ken could be heard typing on his keyboard. In a moment he answered the question. "Thursday's out, but I can hop that evening's return ship and be at Enterprises by mid-day Friday. Will that do?"

"It will. I really want your opinion, good or bad, about this thing. If you like it I want to build a working version and bring it up for a test. See you on Friday."

When Ken finally arrived, Tom was in the building

housing Arv Hanson's model making shops. Arv was usually responsible for building the intricate miniatures of Tom and Damon's inventions. Many were merely static models but he frequently put his skills to work building working scale prototypes. It wasn't often, however, that he built full-sized pieces.

"Hey, Tom. Hey, Arv. Sorry I'm a bit later than I thought, but weather over the Rockies was so bad this morning I had to set down in Salt Lake City for two hours until the storms cleared."

He had been walking closer and closer to the pair who were standing next to an amazing-looking sphere. Nearly four feet across, it was an almost perfect ball. But the thing that made it really stand out was the surface. As he was searching for the right words, the door opened and someone entered.

"It's... well, it's sort of like a—"

"It's a giant golf ball, Ken," Bud Barclay's voice rang out behind him. "Tom's gone and designed a ball that's guaranteed to get you that hole in one you've always wanted. Can't miss!"

Bud may have been joking, but Ken realized that he had hit the nail right on the head. It did look like a giant, dimpled white golf ball. All he could get out was, "Skipper?"

Tom and Arv both grinned. "Yeah. It looks like that," Tom agreed, "but there is a really sound reason for it. You see, even with Tomasite and Durastress to make these things and keep all that heat from re-entry from getting

inside, our tests showed that the real secret was in dissipating the heat to begin with, and that meant making this as aerodynamic as possible."

"And, balls are not actually aerodynamic, are they?" Ken asked.

"Not very. Too much surface friction. And, friction means heat. The dimples force the surrounding air away and let the sphere slip through with half the friction. It comes in a little faster, but that also helps keep heat from having too much time to accumulate."

He pushed in a flush-mounted handle and gave it a half turn. Stepping back from it, Tom and the others watched a hatch—actually about one quarter of the entire surface—open and fold down to the floor. Inside they could see a cozy round area with a seat built into the padded wall materials.

Ken bent down for a better look. He saw that the reclined individual would be laying with their back down and could look up to a small monitor, presumably showing either various status reports or perhaps a view outside.

Tom acknowledged that this was exactly the case. "There are four main screens that can be called up. The first one is, as you guessed, the status of the capsule. Heat inside and out, O<sub>2</sub> readings, elapsed time and estimated arrival time, and things like that. Screen two is the GPS. This capsule can be set to aim for a specific location. It will take the optimal arc route to the re-entry point based on the desired destination. We have five preset destinations in the computer but the occupant can set

whatever they want. Just as long as it puts them on dry land, that is.”

He explained that the other screens could show downward and upward camera views and the final screen was for visual communications.

“Let me see if I have this right,” Ken said. “Say we want the... capsule?”

“Or, pod,” Tom commented.

“Oh, yeah. So, we want the pod to land here at Enterprises. Can it be that precise?”

“Not based solely on the GPS setting. No. So, what we’ve added is a steerable main chute. The GPS gets the pod into the right part of the atmosphere, the drogue chute comes out at seventy thousand feet then drops away at fifty thousand and is replaced by the main chute. Servos are attached to the steering cables and then back to the computer.”

“Tom tells me the computer can get this thing down to within a hundred feet of where you want to be,” Bud said.

“Unless,” Arv cautioned, “it is fighting anything greater than a fifteen knot wind. Then, it’s at the mercy of Old Ma Nature.”

Ken could only shake his head in wonder. Finally an important question popped into his mind.

“How long? How long to get a man from the station to the hospital here or in Bethesda or like that?”

“We estimate three minutes to load and seal up with a

conscious returnee and four for someone who is unable to assist. Launch is as quickly as you get everyone out of the access chamber. You don’t depressurize. We use the escaping air to help push the pod away.”

Arv took up the narrative. “The computer needs about fifteen seconds to get its bearings and then fires one or more of the fifty little retro and steering rockets located inside the dimples. That gets the pod heading back down. We all know that time is of the essence, so the pod will reach the outer atmosphere in about one hour. It hits pretty hard and fast, but the occupant is well padded and secured. The final decent takes twenty minutes.”

“So, if my math is correct, we can get an injured man down here in under ninety minutes?”

Tom and Arv nodded.

“And, I was just hoping for something around two and a half or three. Geez!”

**PART 2****The Test**

IT REQUIRED another five days before Doc Simpson cleared Tom for space flight. “You’ve been through more than anyone should survive, Tom,” he told the younger man with grave seriousness written on his face. “You have to pass all of the physical tests we originally devised before I’ll let you go.”

Doc knew he shouldn’t be surprised by anything Tom Swift did, but he had to admit he was shocked at the ease with which Tom passed all of the tests. And, all in one day.

“I give!” he exclaimed as he signed the forms clearing Tom for full duty. “Just tell me truthfully. Okay. It won’t make a bit of difference, but tell me. Did any of the test give you any problems?”

Tom considered the question, and then answered, “If you could have seen my face during some of them, you would have thought I was smiling. Right now, I am still trying to unclamp my teeth I had my jaw so tight.”

Doc patted Tom on the shoulder. “I’ll keep to my word, Tom. Just promise me that if you do start to have problems, you’ll abort the trip and come back. You can always go back up a few days later. Right?”

Tom nodded and then promised the doctor he would heed his words.

Tom and Bud oversaw the loading of the rescue pod into the hangar deck of the *Sky Queen*. She would transport them and the pod to Fearing Island at which time it would be strapped into the *Challenger*, Tom’s repelatron-powered space ship looking more like a box inside circular girders than something that could speed into space.

“Okay if I come along,” Arv asked as he walked up to the pair.

“Sure. In fact, I’d appreciate it if you can come. If there are any changes that need to be made, it’s always best to have more than one pair of ears listening to the feedback.”

An hour later the trio plus two additional crewmen jettied vertically into the afternoon sky over Shopton. Moments later, Tom reduced the lifters and sent the giant jet scooting south-east toward the private island that acted as space port, marina—for the many undersea craft operated by the Swifts—and construction facility.

Two hours after touching down, the *Challenger* rose into the evening sky and headed for the outpost. It required two hours to properly align the path of the ship with its intended destination. Angle of ascent, speed and even direction of travel were all vital to get correct in order to stop relative motion at exactly the correct location.

Of course, Tom and Bud were old hands at this and could practically do it in their sleep. They arrived right on time and halted exactly twenty feet from the end of one of the twelve spokes that made up the wheel-like station.

It had been decided to just bring up the pod. Later, finished versions would come pre-mounted inside of launching chambers that could be attached to the ends of each spoke. That way, even if one or several spokes were damaged, anyone requiring immediate transport to Earth could go to any of the still active spokes.

Tom and Bud unstrapped the pod and moved it to the 'porch,' a flat, wide veranda just outside the roll-up door to *Challenger's* hangar.

"Let's maneuver it over by the nearest spoke," Tom said to his friend. "I need to figure out just how much inertia someone needs to overcome to get this positioned."

They each grabbed hold of two of the temporary handles that Arv had outfitted in anticipation of just such a need. With Tom taking a slight lead, he and Bud activated their backpack thrusters and began hauling the sphere to the outpost.

Arriving less than a minute later, Tom remarked, "Just as I thought. It's not the getting it moving that takes time and muscle, it's getting it stopped before it hits anything."

"I've got an idea, Tom," Bud told the young inventor with a little gleam in his eyes. "I'll go back to the *Challenger*, you stay here, Arv can float off to one side and act as linesman and we can have a nice game of spaceball!"

Tom was about to dismiss the idea out of hand, but a thought struck him. "You know. That might not be so far fetched an idea at that, Bud. We'll be pushing at least a dozen of these around some day soon. Might as well get

the feel of serving and receiving them!"

They began just a few meters apart, to get the rhythm and timing down, but were shoving the escape pod more than twenty feet within a few tries. By the time Tom called a halt, both were experiencing a little fogging of their visors as the little air conditioning unit in their suits struggled to overcome the sweat they were creating.

Inside the station, Tom, Bud and Arv sat down on four of the vacu-seats in the main hub area. Once dubbed "SukSeats" by Bud, each used a series of tiny vacuum tubes to hold onto the pants of a person, keeping them from floating up and away. The original seats used hook-and-loop pieces, but alignment had been a problem. Unhooking had been another.

"We'll set up the test launch tomorrow. The pod can be positioned just outside of an airlock hatch so our test dummy—"

"Not me this time!" Bud quipped.

"—our completely *mechanical* yet anatomical dummy can be loaded in from the hatch, the pod will be pressurized, and we can all act as the launching force, shoving it out and down toward the Earth."

After the 'evening style' meal—an attempt to hold to a breakfast-lunch-dinner menu had proven to be unpopular—Tom and Arv went back outside and moved the pod back to the *Challenger*. Once inside the spacious hangar, they removed their suits and started going over the pod.

"Um. Skipper? I never built in any way to pressurize



this one. It never occurred to me that we would be opening it outside. Sorry I goofed on that. What can we do?”

Tom shook his head. “Not your problem, Arv. I completely forgot that not having the launching chamber would mean opening it in the vacuum. I’m going to use the machine shop in the outpost to rig a small air cylinder that can be triggered by radio. We pop Darren Dummy inside, close her up, and go ‘beep’ with a little remote and we should be able to put in enough air to simulate station conditions. About nine PSI.”

Arv knew Tom had the situation handled. Besides, the actual pods would have a built-in air supply that would slowly raise the pressure inside so that it would be equal to the air pressure of wherever the pod was landing. Generally about fifteen PSI at sea level.

That would not be necessary as this pod was destined to be picked up by the *Challenger* when it reached an altitude of about one hundred miles. It had no parachutes and was only made from a composite of carbon fiber and resin with a thin Tomasite coating, not enough to withstand re-entry.

Their checks complete, Tom and Arv returned to the station where they parted ways. Arv went to the hub where he engaged a Swedish ex-pat in conversation. Though born in the U.S., Arv spoke fluent Swedish and liked to keep up his skills.

Tom spent a couple hours in the machine shop finally coming out with the completed cylinder and remote.

There were no VIP quarters in the outpost and Tom refused to put Ken out of his commander’s room, so everyone who came up in the *Challenger* returned there to sleep.

Bright and early they returned, escape pod in tow.

Bud had a passenger strapped to the top of his backpack. The dummy. Both “Darren” and the pod were tethered to the end of spoke nine awaiting the big moment.

Ken assembled a group of ten outpost occupants. “These are the guys who will most likely be the ones who get trained in using these pods first. Eventually, I want everyone skilled.” Looking at Tom, he added, “It would be great if any future occupants could get some sort of familiarity training on these dirtside, before ever coming up.”

Tom knew Ken had a valid point. “Consider it done, Ken. Okay. Let’s take turns getting the evacuee inside and the pod sealed.”

Beginning with Tom, who wanted to demonstrate the proper steps, each man took two turns at opening the pod, getting the dummy into position and strapped inside, and then sealing up the hatch. At the end of just one hour, Tom and Ken were nodding and smiling at each other. “If it gets down like you say it will, skipper, we’ve got a winner!”

Ken allowed the men a quick bathroom break after they had returned inside, but called a group debriefing fifteen minutes later.

Tom asked for any questions. The main one raised had to do with the launching chambers.

“If these are suppose to be permanently mounted at the ends of the spokes, what do we do to replace those airlocks, Tom?”

Tom explained that the chambers would be in two parts. One side would contain the escape pod with airtight hatches to both the interior of the station as well as one to the other side of the ring-shaped addition.

“That other side will be the new airlock,” he told the assembled team. It will be about three times larger than the current two-man locks so it will make exiting the station even more convenient! Plus,” he said looking at the men who had recently saved him, “they will have an instant-flood cycle to pressurize in just five seconds.” This brought grins and nods.

Several questions and suggestions were made for the actual pods. One, from a new man with the outpost got Tom thinking.

“Mr. Swift? You say these have a small drogue chute and the large main chute. What happens of the first one comes out at too high a speed and snaps off?”

“Well, and please call me Tom, our computer simulations say we should be okay. We’re using spun carbon fiber for the lines with a tensile strength of over thirty thousand pounds per line. Multiply that by fifty-eight lines and we’ve got massive overkill. The computer models show a maximum of forty-six thousand pounds of drag force on re-entry. But, you’re right. What if?” He

pondered the matter for a full minute.

“The best thing to do is to have a backup. We’re already using a variation of the ultra-thin and ultra-strong materials I first cooked up for the collectors of my solartron—the material is just about ten molecules thick but as strong as a quarter inch of steel. Since the drogue plus its static cables all folds up into a packet about the size of a large ball of yarn, I’m certain we can put a second one in there.” He looked at Arv, who nodded. “We have a little extra space. Might as well fill it!”

After lunch, Tom supervised as Ken’s men put the dummy in the pod for the actual test launch. Giving a thumbs up, Tom pressed the remote and checked the small readout. It showed about eight PSI pressure inside. He was satisfied. He called out, “Okay. Two of you brace against the wheel and give this ball a push to below the *Challenger*. We’ll have to use the ship to give it a good nudge to get it up to speed. This one doesn’t have any retro rockets.”

After watching the pod begin a slow trek downward, Tom said goodbye to Ken and he and his crew entered the *Challenger*.

It took some intricate maneuvering, but Tom soon had the little pod right under the bottom of the main girders. Focusing the upper repelatron against the Moon, he sent the giant ship and its little cargo downward. Fifteen seconds later he backed off on the repelatron forces and let the pod continue its course to Earth.

“All instruments look good, skipper,” Arv called out. Pressure holding, and the GPS is indicating the pod’s

course.” He turned and shrugged at Tom. “We didn’t exactly get it on a direct course. If we just let it go, it would hit the atmosphere at an angle that would swing it into orbit and—” he checked a readout, “—it would get about a third of the way around before dropping down.”

“We’ll pick it up a little higher than I originally thought. Compute course to interception at two hundred miles.”

The little pod was recovered an hour later, and the *Challenger* set course for Fearing Island.

### PART 3

#### Concept: Validated!

TOM GLANCED at his watch. “It’s six minutes late, Bud,” he said to his friend. “It should have been down by now. What’s happened?”

“Don’t know. We had full telemetry up until nineteen minutes ago. It all just cut out.” He looked dismal. This was not good news.

It had all begun three hours earlier.

Ken Horton made an emergency call to Enterprises.

“Enterprises? Horton. We’ve had an accident. I have one man with a mangled arm. The duty medic has him stabilized and we’re getting one of our evac pods ready. If all goes on schedule, we’ll be launching the pod in about an hour.”

Doc Simpson had been called and started walking the station’s medic through a few steps to take to ensure the man was comfortable and wouldn’t bleed to death.

“It’s bad, Tom. Damon,” he admitted to them as they spoke in his office. “Nothing missing, but from what Ken tells me it is pretty crushed. I’m kicking myself ‘cause I never thought to have a camera set up in the infirmary. We just had to do everything by audio. Damn!”

“Don’t hit yourself, Doc,” Tom told him. “We’re still finding our way up there even after all these months.”

On the station, Ken was hovering outside of the

infirmary, watching as the injured man's arm was stitched closed and then placed inside one of Tom's revolutionary pressure bandages. Like an inflatable cast, it could be puffed up with air to immobilize an arm or leg. However, it could easily be shaped and had the ability to provide direct pressure right on any area that was bleeding. A small computer even checked the pulse points and adjusted the pressure to keep enough blood flowing so the limb didn't receive additional damage.

"About there?" he asked.

"Got it, sir," the medic called over his shoulder. "Give me ten more minutes and he'll be ready to transport."

That was an amazing concept to Ken. Before Tom had completed the newly installed evac pods, it required either a wait for a supply rocket, reconfiguration of its capsule, and a slow re-entry taking far too many hours for someone with a serious injury.

"I'm heading to the end of the spoke. Call me as soon as you are ready to bring him out."

The medic nodded, not taking the time to give a verbal answer.

Ken floated down the hall, through the two sealable bulkheads, and out to the airlock at the end of the spoke.

Five men were waiting for him.

He fended off their questions and ordered a status report.

All systems had reported readiness. Tom had built the pods and their launching bays so that the computer, once activated in preparation for a launch, automatically

monitored and reported the status of all internal systems to a readout panel on the wall of the launch chamber every minute until the pod was on its way down to Earth.

At that point, the computer linked with any of the five Earth stations in direct sight of the outpost and sent a steady stream of data.

"Coming out with the patient, Commander Horton," the station's intercom rang out.

Ken resisted heading back down the corridor. He knew that the zero-G conditions meant that the single medic could easily and safely move his injured crewman, and that anyone else might be more of a hindrance than a help.

All bulkheads had been left open to facilitate the quick transfer of the patient. He arrived one minute later.

"Okay. Get him loaded, carefully, into the pod. Peters," he addressed the medic, "make certain he is strapped in as tightly as possible without causing him any discomfort and then double... no, *triple check* that compression contraption and make sure it's snug in all the right places." Turning back to the others, he said, "I want this pod sealed and launched in under five minutes. Go!"

With men floating at various and odd angles, the patient was maneuvered into the pod and turned so that he was in a reclining position. The 7-point harness was arranged and attached and cinched down with great care.

Peters pushed himself partway into the pod and asked two of the others to hold his legs. "I need some leverage, guys," he told them.

In less than another minute, he had the stricken man

properly harnessed and had adjusted the pressure bandage at several locations to provide better results at the angle the arm needed to be. Finally, he administered another dose of sedative and pain medication. With any luck, the man would sleep through the entire trip.

“Pull me out,” he requested over his shoulder.

Ken moved forward and personally closed and sealed the hatch. Patting the pod he muttered, “Safe voyage. Get him home alright.” He shoved backward and told the rescue team, “Let’s get back inside. I want this pod released ASAP!”

And, it was done. Mere seconds after sealing the inside airlock door, Ken slammed his hand against the button marked ‘ARM.’ The red light turned amber and then green and the button changed to ‘LAUNCH.’ He hit it again and they all heard the pop and hiss of escaping air. Suddenly, it was quiet.

Pressing the intercom on the wall he told the radio operator to let Enterprises know the launch had been successful and to give them the exact time. “Just coming up on thirty seconds ago, Tony. Take the mark from... Now!”

Everyone floated back to the hub. Along both the upper and lower ceilings were view ports. Most of the off-duty crew were crowded around them watching the tiny pod as it fired its little retro rockets and began plunging away from the station. Ken got to see it just as it was disappearing from view.

He went to his office and made detailed notes of both the injury incident as well as facts and impressions

regarding the escape pod. He was very happy with both the evac ball and the process but wanted to let Tom know it would be a nice addition to have a camera inside the pod that could beam video back to the station.

*We all want to see how he is doing. Right now, all we can do is hope for the best. It is frustrating!*

Back at Enterprises the data stream was coming through with just the standard delay of a signal traveling over twenty thousand miles.

“Everything is looking good, Tom,” George Dilling stated. He had decided to take personal command of the communications board for this mission. It felt good to be getting back to his first love and not just managing others doing it.

“When will we have him down?” Damon Swift asked.

Glancing at the readout on his screen, Dilling replied, “Eighty-three minutes, plus or minus two.”

They all stood around watching both the readouts for the capsule—everything looked good including the heart monitor that Peters had placed on the man’s chest—and at the clock that was counting down at an interminably slow rate.

“If I’d just thought to put a camera in there we could see what’s happening!” Tom said pulling out his electronic organizer and making a note.

He knew just where it could be mounted and was mentally reviewing the computer to see how it might be connected when George said, “The heart monitor just went up. I think he’s awake.”

“Can we contact him?” Bud asked.

“No,” Tom answered. “We figured that anyone needing to come down so quickly wouldn’t be in any condition to respond. The idea is that they are sedated. Is he waking up?”

Dilling checked his readouts again. “Hmmm. Looks like he’s settling back down. Might have been a little data spike, but everything else looks smooth, or he might have had a little flinch. It’s back to fifty-one BPM now. Just about what it was before.”

Tom made another note: **Add radio—voice activated.**

Sooner than they realized the little sphere was beginning to brush up against the outermost atmosphere. Sensors showed the outside skin temperature had risen from minus two hundred five to minus fifty-nine from the friction. It would get much hotter.

“According to instruments, he should be down in twenty-three minutes,” George told everyone.

Eight minutes later the period Bud referred to as “nailbiter’s nine” arrived. This was the stage in re-entry where communications in and out of a returning ship were obscured by the immense heat building up around the plunging object. Lasting just about nine minutes, everyone had immediately adopted it and the term had become a standard.

“Nailbiter’s nine in three, two, one. Data lost.”

Damon placed a hand on his son’s shoulder and gave a little squeeze. “Now we wait. I know it’s coming down on the Enterprises grounds, but where?”

“The north quarter, Dad. It has the largest total area. Doc is already on the perimeter with two rescue trucks and an ambulance. He’s going to check the man out and then transport him to Shopton General.”

“Good,” the older man said. “We have a wonderful facility here but we don’t have everything. Best to get him to a full hospital.”

They stood, side-by-side, for another five minutes. Waiting. Watching.

“Anything on RADAR?” Tom asked.

“Nothing yet in target area,” called out a technician manning one of the air search scopes in the control tower. He was on a direct link to the comm room, eight stories below.

“I’m going up,” Tom told everyone.

He and Bud raced up the stairs and into the large control room. Two men were standing at the north side looking up through high-powered binoculars and the RADAR tech was sitting at his scope just a few feet away.

“It’s just two minutes until touchdown,” Tom said with worry adding an edge to his voice. “We should be seeing something by now. And, where’s the telemetry?”

One of the controllers handed Tom his binoculars. “Nothing yet, skipper. I’m gonna see if there are any reports from the FAA.”

He crossed the room and picked up a telephone. In moments he has in deep conversation with someone.

“One minute overdue,” Tom said, now very worried. He moved the binoculars all over the northern sky in an

attempt to spot the parachute that should have already landed the pod safely.

Bud had left his side for a moment and returned with a cup filled with cola. "Here. Take this," he offered the cup to Tom. "Your voice is sounding a little hoarse."

He didn't feel like drinking, but Tom took the cup. Without thinking about it, he drained it and set it on a desk.

Glancing once again at his watch, Tom said "It's six minutes late, Bud. It should have been down by now. What's happened?"

"Don't know. We had full telemetry up until nineteen minutes ago. It all cut out and never came back." He looked dismal. This was not good news.

The controller who had been on the phone called over to them. "The FAA just had a report from an airliner coming down from Toronto. They spotted a cluster of parachutes about twenty miles north of here at about thirty thousand feet five minutes ago. Could that be the pod?"

Tom shook his head. "No. Not if there's a group of—" He stopped short. Turning excitedly to Bud he almost shouted, "Of course it could be the pod. If the drogue chutes both deployed and then didn't cut away, there could be all three of them out."

"Could the extra drag keep it from coming down?"

"Um, Tom," the controller said, now standing by the two boys. "That pilot also mentioned that there are swirling updrafts at that altitude. He was asking for permission to drop below them."

"Absolutely. That's got to be it. Did he give a location?"

"Only an approximate. Sounds like he was a few miles west of the north tip of Lake Carlopa."

"Get the RADAR searching over there," Tom ordered. "We've been looking at the wrong part of the sky."

"Got it!" the RADAR man called out. "Eighteen thousand out on direction three one three. Give me a minute to get another few fixes and I'll give you course, speed and decent rate."

Everyone crowded around the scope. A minute later the figures were in. Even with its unexpected extra ride time and the multiple parachutes, everything pointed to the capsule touching down in the northwest corner of Enterprises in just two minutes.

Calling on the radio to Doc, Tom gave him the word where their patient would touch down. "Get him to the hospital, pronto, Doc. Our little space ambulance is getting him this far. It's the least we can do."