SCOTT BAIRD

MAGELLAN

OFFICIAL MOVIE NOVELIZATION

MAGELLAN

novelization by Scott Baird

based on the film from Firespire Productions and Arrowstorm Entertainment

written by Scott Baird and Rob York

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Prologue

As we look out into the Universe and identify the many accidents of physics and astronomy that have worked together to our benefit, it almost seems as if the Universe must in some sense have known that we were coming.

--Freeman Dyson

The field of stars stretched out into infinity, silent and massive on a cosmological scale. There was no darkness—space was only black to those whose sight was cut short, whose eyes couldn't take in all the light that poured across the expanse. Glowing orbs of fusing gas and spiraling streams of looser matter filled the space between the galactic core and its outer arms, brilliantly beating in a symphony of sidereal interplay that had to be witnessed in its fullness to be cognized by mortal mind.

Closer in to Earth's home system, but still mind-breakingly far from the pale blue dot that had sheltered humanity for its few brief eons, Eris rode its quiet track in silence. The icy surface of the rocky astronomical body glistened in sunlight that had traveled fourteen billion kilometers over the course of several hours to get there from the yellow dwarf around which both it and Earth swung, dense balls caught in the slowest of tides.

Farther out, free from the Sun's influence but still hundreds of years from the Oort Cloud, Earth's pioneering spacecraft Voyager accelerated toward the deep unknown. Following it came its sibling, barely escaping the heliosheath, and then New Horizons on its long post-Pluto journey, and the Pioneers came after. These obedient robots, unthinking and half-blind, bore their parts well as Earth's initial emissaries.

Eris saw them go. Eris wasn't so blind as they. The dwarf planet listened, and it heard its kinsmen on Saturn's Titan and Neptune's Triton singing the first signs of interstellar awakening from the little water-world that circled Sol.

"Soon", they said. "Watch them. Soon they will reach the Slumberer. Soon they will wake it, and we will begin signaling the blue planet."

1 – The Question

Roger Nelson cleared his throat as he took center stage. It had been a while since he'd rocked a publicity event, and he felt surprisingly nervous in front of the small crowd his wife's community college had gathered. His deep brown eyes passed over the rows of students, who had calmed down and were now waiting in quiet anticipation. He resisted the urge to check his tight brown hair or fiddle with the bottled water that had been left for him on the lectern.

"Midway through the last century," he began, using the familiar lines that had gotten him through a dozen of these presentations in the past, "a few of mankind's brightest minds got together over lunch to seriously discuss a question which until then had been relegated to the pages of Astounding Science Fiction. The question was 'where is everybody?', asked on a cosmic scale."

He held out a hand and raised his eyebrows as if to say "Good question, right?". The crowd was keying in on him well, especially the girls in the front row, and his nerves began to die away. He could see Abigail standing in the back of the small auditorium, arms folded as she watched. She gave a shake of her short, dark hair, a half-conscious cue for him to get on with it.

He decided to ham it up a little for her sake. His wife took her role as a coder for NASA very seriously, and although she had quickly moved on from this tiny school to far more prestigious academic institutions, she was still counting on him to impress the alma mater for which she still carried a lot of nostalgia and pride.

"In a galaxy vast enough to encompass a hundred million black holes and a thousand times that many burning stars," he went on, backing up a step, "we naturally expect to see some signs of life beyond this little speck we're living on. So where are they?"

He waited a moment too long, as if really expecting someone to answer, then picked up the monologue just before some awkward student could raise a tentative hand. "Since that lunch-time chat among very nerdy but very, *very* smart physicists, we've extended our reach beyond the solar wind's farthest traces, and our sight all the way to our universe's horizon. But despite the staggering biodiversity here on earth, we have yet to encounter a single piece of evidence that says we aren't alone. Suffocatingly, blindingly

alone in a deaf, uncaring universe of rock and ice and gas.

"So, are we an anomaly? A lonely group of chance biological specimens cast adrift by forces we barely comprehend, and which refuse to comprehend us?" He shook his head. "You're science students, most of you. You know that by its very definition, an anomaly is unlikely. It should never be assumed as the likeliest explanation for anything. But the possibilities for all this deafening silence, the reasons we haven't yet sensed an alien presence anywhere we've looked, range from the terrifying to the sublime."

Nelson briefly considered outlining some of those possibilities for the students: the interstellar predators, the grand simulation, the cosmic zoo. But therein he had lost crowds before. These kids wanted to hear what it was like to bum around the ISS, and when Osiris Rex was due to land in Utah.

So he just threw up his hands and then pointed at a kid in the front row, a geeky-looking fellow with a bulky tablet in his hands. "Where are the others, and why can't we find them?"

The guy spluttered, and Nelson talked smoothly over it while the other students snickered. "The answer would be mankind's most important discovery, would it not? And so we search, hoping with each passing decade to observe something that might give us an answer. We send out our little robotic wayfarers, and we listen for radio signals, all the while clueless as to whether we're even in the right arena of communication.

"But! If we could find so much as a petroglyph on a distant planetoid, or a chunk of worked metal floating through space, or even a snatch of some more-interesting-than-usual static coming from a distant star, then just imagine how our world would change. Overnight, it would no longer be 'you and I here in the U.S. of A.' It would suddenly become 'us here on Earth' and 'them out there'.

"That could mean a worldwide panic attack, if the news isn't good. But it could also mean a sudden end to war, a new era of global cooperation, and the launching of a wave of space exploration and colonization that would take us swiftly from a single-planet species to a multi-system spacefaring civilization, of such grandeur and reach that our finest terrestrial achievements would be looked back on like the cavemen poking sticks in the fire.

"And that, boys and girls, is why we're going up in space, and building complicated machines to send out, and listening so carefully at Atacama. Contrary to what some congressmen seem to think, it's the only

project that really matters at all, on the cosmic timeline. That's why my current project, the X-57 experimental orbital lander, is now being called 'the tip of the space exploration spear'.

"Questions? I've got thirty-five minutes."

Abigail met him afterward near the podium, and he gave her a sly glance. Her lips were pursed, but Nelson thought he caught the tell-tale dimple in the side of her cheek that showed she was holding back a grin.

"How'd ah do?" he asked in a playful cowboy accent. He folded his arms to accentuate his muscular upper body, and raised his square chin.

"Well, you came across as patronizing, narcissistic, and infatuated with your swell job," Abigail said. "You must think you're the only astronaut ever to grace this auditorium with your illustrious presence!"

One girl, the last student to leave, caught the exchange and hurried away with a mortified look on her face.

Abigail grinned, dropping the accusatory tone. "But I think they loved it. Aren't they adorable?"

"Pretty good crowd," Nelson replied, taking Abby's hand in his and interlocking fingers. "A couple of them had interesting questions. I wanted to tell that one kid we were looking for microbial traces on Europa, the discovery of which would make his biology teacher wet himself, but I'm not sure how much of that has been announced publicly yet."

She raised an eyebrow. "I thought it was all supposed to be public domain, above-board stuff. Isn't that the whole point of NASA?"

"Well, most of it, yeah. But we don't go spouting off every technical measurement and mission plan. Public Affairs would be pretty bummed if we let the Chinese program get a leg up on us. You've only been coding A.I.'s at the agency for what, three years, honey? Sooner or later you'll probably be on the receiving end of a long, grouchy meeting from the public affairs director telling you how to funnel all communications through them, and which font to use in your slides, and which is the official NASA gray."

Abigail frowned. "I didn't… was I supposed to clear this lecture with somebody? I didn't even think of contacting Public Affairs. I just got an email from my old dean asking whether my astronaut husband would do a forum, and I said yes."

Nelson put on a frightened expression and began to tremble all over. "Oh, no. Abigail, you didn't… you… we're both going to be fired!"

“Stop it,” she said, hitting his arm and trying not to laugh.

“It’s fine,” he said, cutting the act. “Crew members do these all the time. And anyway, what Public Affairs doesn’t know can’t hurt them.”

Abigail shook her head. “I still feel new at NASA. You have to give me a heads up about that kind of thing. I don’t want to look like an idiot. Speaking of which, did you clear your schedule for my A.I. symposium lecture?”

Nelson squinted at the ceiling. “Let’s see, that’s tomorrow night, correct?”

“No, that’s on Saturday morning. Tomorrow night we’re barbecuing with Ben and Jacqui. Did you clear your schedule like I asked? Come on, I came to hear *you* speak. You have to be there for me on Saturday!”

Nelson held up his hands in surrender. “Yes, I cleared it. I’ll be there. Don’t take everything I say so seriously!”

Abigail rolled her eyes and sighed. “You’re an astronaut, Roger. If *you* can’t be taken seriously, then mankind is in serious trouble.”

Roger grinned and leaned in to kiss Abby on the lips, adding a little more heat than would normally be appropriate for a guest lecturer at a university. Just to make her squirm in front of the faculty who were still milling around the back of the room.

“See you tonight, honey. I’m looking forward to finishing that chess match after dinner.”

He hurried to the exit, leaving Abigail flushed and stammering behind him as her former dean approached to thank her for arranging the event.

2 – The Call

The stars were out in full force by the time Nelson got the grill fired up the following evening. It was getting dark much earlier now that September was over, but in Florida October was still fine grilling weather. Porch lights were on up and down the row of neat houses, and Roger Nelson had run a couple of shops light out on extension cords from his garage to cast pools of light around the lilac bushes along the driveway.

The Nelson's neighbors, Ben and Jacqui, had three kids running up and down the block with sparklers left over from the Fourth of July, and one of Roger's crew mates, Michael Thornton, had brought his girlfriend along to enjoy the evening with them.

Roger was turning the juicy meat when Abby backed out of the kitchen doorway carrying another plateful of raw steaks. They hissed and sputtered as Roger slapped them onto the grill. "Is that the last of them?" he asked.

Abigail nodded. "And NASA's on the phone," she added, pulling a portable handset from her back pocket. "Thought you might like to know."

Roger quickly closed the grill lid, wiped his hands on the "Trophy Husband" apron Abby had gotten him for his birthday, and traded his barbecue fork for the phone. He answered, moving away from the noise, but Abigail hovered after him, ignoring the grill for the moment. "If it's Becker, tell him you can't go," she loudly whispered. "Your wife is speaking at a very important symposium and you have to be there or she'll kill you. Literally *kill* you." Abigail brandished the long fork, still dripping with marinade.

"Yes. Absolutely," Roger said into the phone, turning away from Abby. She danced around to get in front of him again, much to the amusement of their watching friends. She mouthed the words "symposium" and "have to go" at him, but he shook his head with a half-grin and concentrated on the phone conversation. "Tomorrow at ten hundred hours. I understand. I'll be there. Thank you."

As he hung up, Abigail lowered the fork she'd been mischievously waving, and her gentle face registered as genuinely crestfallen. Her friend Jacqui looked on with concern.

"Roger?" Abby began. "You're seriously going in tomorrow? Right at ten?" She stamped her foot. "Becker does this every time! What is up with

him? Whenever I—”

“That wasn’t Becker,” Roger said, looking at Abigail with forced composure. There was suppressed excitement in his voice, and Ben and Michael edged closer to hear what was up.

“Well, then who was it?” Abby asked. “And why can’t they leave you alone for one weekend out of the entire year so that I can—”

Roger interrupted his wife again, gently. “They were notifying me of an urgent briefing. Something about the X-57 going up sooner than anticipated.”

Abigail stopped, further invective caught in her lips. “A… *mission* briefing?”

“Sounds like it.” Roger’s composure slipped and he grinned widely. Abigail let out her breath and then grinned back. Roger caught her up in his arms and she wrapped hers around his neck as they stared into each other’s eyes. It seemed that dreams were about to be fulfilled, dreams long deferred.

Michael clapped Roger on the back. “They’re finally sending you to space, man?”

“I think they just might,” Roger replied without looking away from his wife. “No one else can pilot the X-57 at this point, not solo.”

Abby laughed with delight, and Roger picked her up and swung her around, setting her back down on the lawn.

“Roger, this is it! You’ve been waiting for this for… how long?”

“Oh, a decade or two,” he said, still trying to keep his voice casual. He gave his wife a fierce hug. “Sorry about the symposium, though. Really.”

She pulled away and gave him pouty-lips. “Yeah, well, NASA’s in trouble with your wife. Tell ‘em that tomorrow morning.”

Roger nodded, grinning ear to ear. He still had the phone clutched in one hand.

“Hey, uh, Roger?” Ben asked, not wanting to intrude on the couple’s moment. “Congrats, man. Maybe you’ll rescue the planet from an asteroid or something. Now, Abby, if you’ll hand me that barbecue fork, I’ll go rescue us some steaks. ‘Cuz I’m pretty sure they’re burning up on reentry right now!”

Abigail scowled and yanked the fork out of reach. “That’s not funny, Ben. No more jokes that could jinx us. My husband’s going to space!” She hurried over to the grill and pulled out several well-done steaks.

While chewing his later, Ben made another quip about slathering his with aloe vera, and nearly got his hand skewered with the barbecue fork.

Then the talk turned to speculation about what a mission involving Nelson's X-57 craft might involve. The suggestions got more outlandish as the evening wore on, and they celebrated late into the night, toasting Nelson and the stars above with their drinks.

Commander Roger Nelson took the seat offered him in the windowless conference room, a seat right at the head of a long table. That told him he was likely the only man in the room that didn't know what he was about to hear.

He was dressed in his best suit, a crisp gray Hugo Boss, on Becker's tip that the Secretary of Defense would be in attendance. Roger hadn't gotten around to looking the man up, but assumed he was the beefy, balding fellow that had taken a chair on the right side of the table, with a pretty blonde assistant in tow.

On the left, holding a folder of important-looking documents, sat Gerald Becker, the middle-aged director of Nelson's experimental spacecraft project. The X-57 was hardly experimental at this point—it had gone into low earth orbit four times so far—but its intended mission was a future deep-space asteroid probe, so it technically hadn't put on its big-boy shoes yet. Nelson was ecstatic at the possibility that it might finally get a chance to leave orbit, particularly with him in it this time, and he could tell that Becker was as well. But there was something else that gave him pause, a somber cast to the director's features that meant they should tread carefully in this meeting.

Another NASA employee, Matthew Hardiman, was backing up Becker with a large tablet that could connect to the room's projector. The young man was clearly nervous to be on the spot in front of the Secretary of Defense, and kept adjusting his squarish glasses. He waited for Becker's cue; Becker deferred to the SecDef.

"Go ahead, Director," the beefy man said, straightening his tie and leaving untouched the expensive coffee his assistant had brought along.

"Certainly, Mr. Secretary," Becker said, and took a breath. When he looked at Nelson, it was with an air of one dropping a bombshell that was fully expected to overwhelm its target.

"Approximately forty-eight hours ago, Commander Nelson, SETI reported a radio anomaly picked up by Arecibo. A low frequency pulse repeating at constant intervals, nothing we've ever heard before. Within

minutes the VLA and Atacama had picked it up too. They sent it our way, and we started listening. I'd like you to hear it now."

Nelson, totally mystified, watched as Matthew cued an audio file and pressed Play. A pulsing tone sounded from the tablet device, throbbing and humming with otherworldly rhythm. Matthew let it play until the Secretary shifted in his seat, and Becker held up a hand. The sound was unlike anything Nelson was familiar with. The mention of SETI raised the hair on the back of his neck, but he refused to jump to any hasty conclusions.

Everyone was looking at him to gauge his reaction to the sound. "Some kind of pulsar, perhaps?" he muttered, knowing it wasn't likely, but unsure what else to say.

"That was our first guess, of course," Becker answered, "going off of the reaction to Burnell and Hewish in the Sixties. But we quickly discarded that possibility, because the signal isn't on sidereal time. Yesterday SETI reported a second anomaly, this time at a higher radio frequency than the first. And then a third signal showed up last night, higher still."

Becker nodded to Matthew, and the young man played audio recordings of the second and third signals, again pulsing with constant intervals but higher in pitch. Nelson listened with consternation written across his face.

"What are they?" he asked, once the audio had ended. "I'm a flier, not a professional astronomer, Gerald. Lay it out for me, will you?"

Becker took a breath and tugged at the collar of the sweater vest he was wearing under his suit coat. "Look, Nelson, we aren't jumping to any conclusions here. But these three signals have been transmitting consistently ever since they came on. And after we received the third signal, one of our audio experts realized the second pulse is exactly four semitones higher than the first, and the third is seven semitones higher. Play them all together, now, Matthew."

The young man was ready with another audio clip and quickly played the file. It began with the first signal, layered in the second on top of it, and then joined the third signal over the others. To Nelson, it sounded pleasant, triumphant, encouraging. Like the initial strain of a song about to burst into life.

Something was nagging him. When the audio clip ended, he asked Becker about it. "A second ago you used the word 'transmitting', Director. Not 'emitting'. Why?"

Becker nodded. “In musical theory, Commander, what you just heard is called a perfect major triad. The primary harmonic building block of tonal music. Unless this is a complete coincidence—and I’d have to be a very stubborn man to make that stretch—it’s essentially some kind of *space music* that we’re receiving.”

Nelson looked over at the Secretary. His blonde assistant was surreptitiously fussing with a smartphone under the table, but the SecDef himself was staring at Nelson with rapt attention. Becker also stared at him, calmly but with a strained look as if he was still grappling with the concept himself.

“Are you saying these signals are *artificial*, Becker?”

Becker slowly nodded, but didn’t say anything.

Nelson continued, mentally sliding the pieces into place as he spoke. “You’re saying that from somewhere across the galaxy, somebody is sending us a song? To communicate with us?”

Becker cleared his throat. “This may be a lot to take in, Commander. But, uh—”

The Secretary leaned forward and cut in. “Not across the galaxy, Commander. Right here in our back yard. These signals are, all of them, coming from within our own solar system.”

Nelson raised his eyebrows and looked at Becker. The director nodded.

“They’re originating locally. Matthew, the map chart, please?” Matthew activated the projector and transferred a basic map of the solar system to the big screen at the front of the room, with planets radiating out from the Sun along their elliptical orbits, and several other celestial bodies included as well.

Matthew, unable to contain his enthusiasm, spoke up despite the intimidating presence of the Secretary. “We traced the radio signals to three separate points of origin. The first is transmitting from Saturn’s moon Titan, we think at a point near one of its poles. The second is coming from Neptune’s moon Triton, maybe around the equator. And the third… that one’s coming from the dwarf planet Eris.” He got up to point to the markers on the projected map, stretching his arm to reach Eris near the edge of the map, far from the Sun.

Becker took up his explanation. “The signals probably all began transmitting at the same time, but Triton and Eris are four, four and a half

light-hours away from Earth. We've got all our telescopes trained on those locations, and we even pinged Titan with a return transmission using the same chord. But they just keep beaming out those radio signals, straight to Earth." He opened his folder and started leafing through the print-outs inside.

Nelson sat back and whistled softly. "And we have no idea what's out there, what kind of machinery or entity might be doing the transmitting?"

The Secretary of Defense laid both his hands on the table. "That's where you come in, Commander. We're scrambling a mission to travel to each location and discover the exact source of these signals. Collect samples and, if possible, the transmitting devices themselves. Get us some idea of what we're up against here. For this kind of urgent mission, we need a highly specialized astronaut with the right background for the job. I've been told you're just the man for it."

Nelson, finally confronted with his part in the plan, sat up straight as a rod. "To fly a manned mission to Saturn?"

"And to Neptune, and to Eris," the Secretary said, nodding. "I gather that it's quite a long trip. But you've got the spaceship for it, don't you?"

"You mean the X-57?" Nelson asked, looking over at Becker. "It's a lander, not a long-distance vehicle. And it's not outfitted for a mission of that duration. You're talking—"

"It will be shortly," Becker said, looking over the paper on top of his stack. "With all resources shifted to this mission on emergency priority, I think we can assemble our interplanetary vehicle in orbit and be mission-ready in just under eight months. The X-57 will be the command module and the surface lander, and the larger vehicle will be AI-controlled."

Nelson stared at his director, dumbfounded. Nothing like this had been attempted since the Cold War. This was history-altering. The back of his neck tingled as he realized that he was either the subject of a bizarre prank, or he was about to become one of the most scrutinized individuals of all time.

The Secretary, impatient with the astronaut's reaction, raised his voice. "Commander Nelson, these signals, whatever they are, have created quite a stir in the international community over the past several hours, and certainly in the White House and in my office. We don't know what we're looking at here. We're flying blind! It's quickly escalating from nifty scientific find-of-the-century to the gravest threat to national security we've ever faced.

“The ideal window to launch this mission would be three years from now, or so I’m told. But there is a manageable window at the end of June, and our intel is telling us that the Chinese are already shooting for it. We can’t allow that to happen.”

Nelson shook his head in disbelief. “So now it’s another space race with the communists?”

The Secretary grew even more stern, interpreting Nelson’s comment as a challenge. “That’s right. And in my department, we’re not into losing, especially when there’s potential alien contact going on. Are you up for this mission, Commander?”

Nelson nodded respectfully. “Yes, sir. Absolutely. I’m your man.”

Becker chimed in to calm the moment of tension. “Most of the international space exploration community is getting behind us on this and following our lead, because we have the infrastructure in place to pull it off. We should have billions pledged by nightfall to speed up the artificial hibernation program and other technologies that aren’t quite there for a decade-long mission.”

Nelson was floored all over again. Matthew, noting the look on his face, nodded and advanced to a slide that showed transit times between the signal locations, using planets for gravity assist. “Eleven years round trip, Commander. You’ll be in stasis for most of it, though.”

“Yeah, but Abby won’t,” Nelson muttered. He swallowed, glanced at the Secretary, and then back at Becker. “Of course I’ll do whatever it takes, sir. But can I ask why we aren’t just sending a probe?”

“We’re looking into the feasibility of sending advance probes to attain survey data,” Becker replied, “but it’s simply too important a mission to trust in the hands of remote operation. In the event that a probe encountered the unexpected, re-configuring a follow-up mission would take several more years. We need someone out there who can adapt and respond to the situation as it unfolds.”

The Secretary of Defense cut in with a series of emphatic hand-waves. “Nelson, we’re not just sending you to some distant rock in hopes of gathering a little scientific information. Whatever those transmitters are, they were put there for a reason. We need real-time decision-making. Humanity’s outstretched hand! The bottom line here is that we are facing the real possibility of first contact. We want you to be Earth’s ambassador, scientist, investigator, and advance scout.”

The beefy man glared down the table at Nelson. “You’ll be gone a long time, Commander. Can you handle this? Can your wife handle this? You’re duty-bound to go, as I understand it, but Director Becker here requested that you be given the option of refusing the mission. In case you don’t think you’re fit for it.”

Nelson looked at Becker, who shrugged.

“I wouldn’t have put it in quite those terms,” Becker said, “but I think it’s important you make the commitment voluntarily. I shouldn’t have to tell you that despite our full efforts to support you, once you get out there… well, with a first-time mission like this there’s always the possibility that it becomes a very permanent decision.”

Nelson squared his shoulders. “I cannot refuse the chance to make one of mankind’s greatest discoveries. Perhaps the greatest discovery since the birth of our species. I am your man, and I will complete this mission. And don’t worry about my wife—she’s NASA herself, and she can manage. She’ll be thrilled.”

Becker nodded, but Nelson saw him almost wince at the mention of Abigail. Becker knew Abby personally. He’d always been a softy when it came to crew families, and Nelson could tell he didn’t like the prospect of burdening two of his own with an undertaking immense enough to bend or break them.

The Secretary nodded his approval. “Good. That’s what I want to see. Now, we’re going to announce the mission tomorrow morning. Get a jump on things for once, keep those Chinese guessing. I don’t want a word of this leaking until then. You tell your wife, Commander, but no one else. And Becker, I want daily status updates for the next eight months. You can run them through my assistant here. I’ll see you in the morning prior to the press conference.”

With that, he swept from the room, his blonde assistant in tow.

“Is this all for real?” Nelson asked once they had gone.

Becker nodded, then creased his forehead and frowned. “You’re sure about this, Nelson? You can take some time to think it over. Talk through it with Abigail.”

“They’re announcing it in the morning,” Nelson pointed out. “But fortunately I am sure. I’ve never been surer about anything in my life. This is what I was born for.”

He slowly shook his head, mulling over the prospect of what he had

so suddenly gotten into. “Man, oh man. Abby is going to flip. She’ll be so excited! And she’ll flip.”

3 – The Separation

"This is insane, Roger!" Abby shrieked, turning from the kitchen sink where she had deposited her uneaten dinner. Roger was still sitting, poking at his half-eaten lasagna. "You just signed away ten years of your life. Our lives! *My life*. What do you expect me to do the whole time you're gone?"

"Oh, I don't know, you do pretty well without me when I'm gone for training," Roger grumbled back, unwilling to match his wife's emotional level but feeling indignant all the same. "When we signed on to this whole thing together, you knew what we were getting into. You were okay with it then!"

Abigail threw up her hands. "That's when I thought there could someday be a slight chance I'd end up a widow. You're asking me to *certainly* be a widow, effective immediately, for ten years with no way out!"

Nelson looked up at her, hurt. "A way out? Abby? Come on! I've never even questioned orders before, much less refused them. Now the Secretary of Defense has assigned me this mission in person, the most important space mission since Apollo, and you want me to weasel out so we can sit here and play chess together?"

He gestured without looking at the side table where they kept a constant chess match going, making moves throughout the week as their individual schedules allowed. It was a point of connection the two working professionals had cherished throughout their marriage. Now it was Abby's turn to look hurt.

Nelson sensed he'd pushed too hard, and looked back down at his plate. "Anyway," he sulked, "I still might die up there. So there's your way out."

Abby let a tear roll down her cheek and quickly wiped it away. "So just like that, Roger? Some guy with a badge tells you to jump off a cliff, and you agree without a moment's hesitation? Good soldier boy." Nelson flinched but didn't look up. "You don't have to blindly follow everything they tell you, you know. You could choose your own path."

Nelson was silent for a moment. "This *is* my own path," he finally said, putting effort into keeping his voice measured and cool. "It's what I've chosen. It's what I've dreamed of all my life."

Abby didn't respond, so he got up to take his plate to the sink. He left

it there and then stood in front of her.

"I know it is," she finally said. "I can see this is how it has to be. I should have seen it coming, and in some ways I did. But it hurts. Terribly. I never imagined it would *hurt* like this."

Nelson slowly nodded. "Abby, I just need to know if you'll be there with me."

She held her breath for a long time, then let it out shakily with a half-sob. Staring at Nelson's feet, she gently reached out and took his hand in hers.

"The entire way, Roger."

Gradually they came together and leaned against the counter, staying there with heads resting on each other's shoulders for a long, long time.

The launch began slowly, as all such processes had to when it came to something as complex as space travel. Roger, who had rehearsed in the training module for months now, was bored to tears two hours in. But the thought of what lay ahead, the unknown entity that silently awaited his arrival out there on a distant moonscape, kept his imagination fired.

Three days ahead of launch, the countdown clock had been activated and backup systems were all checked. Flight software and backup software was updated and loaded into mass memory, navigation systems were checked, and the mid-deck platforms were removed from the rocket that would carry the X-57 lander craft up to the point where its interplanetary vehicle, dubbed Magellan, waited in orbit. It had taken four separate launches to assemble and test, but no expense had been spared. Now it waited silently for its human pilot to arrive.

On the day of the launch, propellants were loaded, umbilicals were detached, and a variety of other systems were checked out, in precise order: inertial sensors, communications, and ascent switches. Much of this went on while Nelson and other mission control personnel were in engineering and weather briefings. These took even longer than usual, because they had space weather to account for that was much farther out than historically simple trips into orbit or to the moon. Once the Magellan got as far out as Saturn, all kinds of new factors were introduced.

An entire team of assistants ran interference for the Nelsons, carefully limiting their exposure to the flurry of international attention the mission had generated. It was important for them to focus on the upcoming

mission and avoid getting swept up in the psychological wars sweeping the internet. As if there weren't a hundred million reporters and a few billion followers eagerly clamoring for every detail about the astronaut and his unprecedented mission.

Finally the launch pad was cleared, external fuel tanks began loading, and Nelson could feel his adrenaline begin to rise at the prospect that soon, he would be in space. He meditated briefly to control his emotions and maintain the long, steady focus he would require to achieve orbit. The A.I. aboard the Magellan would perform auto-piloting duties admirably once in space, but getting to orbit would be largely the same crew-centric process that had put the space shuttles there.

Roger's exposure to others was limited by the pre-flight medical quarantine rules, but fortunately Abby had passed the medical check at 100% and was allowed access. They had a moment in private to say goodbye right before entry to the launch vehicle. Curiously, though, neither of them had much to say. They found that they had hashed everything out over the intense months leading up to the launch, and now that the day had arrived they chose to simply sit in silence for a while, holding hands. Being together for what felt like the last time. Abby leaned her head on Roger's shoulder and they just listened to each other breathing.

Then the call came for the crew to enter his spacecraft, and they had to part ways.

"I'll talk to you soon," Abigail said. Becker had promised her a direct line to the Magellan once it got into orbit. She forced a weak smile.

The thought flashed through Roger's mind that they would indeed be able to talk, but it would be a very long time before they would feel each other's presence. He felt a sudden urge to take Abigail in his arms, but pushed back the impulse. He had done that many times in the past few days. Now it was time to be going. Abigail was doing an admirable job of maintaining composure, and he knew she was doing it for him so that he wouldn't have to deal with difficult emotions during the critical hours ahead.

So he nodded and left. She knew how he felt. There was nothing left to say.

After an hour in the White Room, Roger entered the X-57 spacecraft and took his seat. He began checking cockpit switches and carried out a voice check with Launch Control and Mission Control. It was just like the rehearsals, a job that had to be done, a sequence that had to be followed.

Mentally, he was already floating in zero gravity.

As the hatch was sealed behind him and the crew retreated to their fallback area, however, he felt suddenly alone in a way he hadn't experienced before. Always before there had been other crew nearby, trusted companions, brave men and women that were alongside him and constantly interrupting the rehearsals. Now they were only voices in his earpiece, their faces already fading in his memory. They would not intrude this time. This time, he was headed into space alone.

He missed Abigail already, and he missed the busy hive of innovation and technical accomplishment that was NASA. He ran his hands over the familiar controls of the X-57's cockpit, reminding himself that he would only be awake for a few days of the years-long journey ahead. The loneliness was purely psychological, and the heaviest parts of that burden were not on him.

In Launch Control, Gerald Becker's eyes flitted between a video feed of Nelson in the cockpit, an exterior feed of the entire Launchpad, and a mission-critical systems dashboard. So far, everything was nominal and there was no cause for worry. He felt a surge of pride in his team, and knew the launch would go well. Whether the rest of the mission would go as smoothly once Nelson got into space and began encountering unknown variables, well, that was less clear.

The months of work on the Magellan had been completed well ahead of schedule, as the mission took full NASA priority and got additional boosts of funding and political support from those who understood its importance. But testing of the crew-centric systems had dragged on far beyond the expected period until Gerald Becker began to seriously worry. For the mission director, this was not just a high-profile mission. It was an epoch-defining transitional moment for humanity, and he had no doubt that if anything went wrong, every note, every meeting, every minute of every day would be examined in ruthless detail. He would personally bear the brunt of it all on his shoulders.

It didn't help that one of his lead programmers was married to the sole crew member. Abigail had put constant pressure on her team to work later, test harder, and take no risks. Everyone had shared her enthusiasm and rigor at the beginning. The excitement inside NASA's various mission centers was palpable. Eventually, however, Becker had to remind her that any

manned mission required the same level of dedication, and she couldn't delay the timetable to refactor code every time another minor bug surfaced. There was a method for dealing with such things in a reliable way, and they were working toward a fixed launch window.

She fought back ferociously at first, accusing the entire command structure of setting her husband up for mission failure and a slow, cold death in space. It was only after several sit-down meetings with multiple links in the chain of command that she was finally convinced the original schedule provided for the highest standards to be met.

Abigail was a major player on the team that was finalizing the artificial intelligence that would control most of the ship's functions, and updating it for the specific mission parameters Nelson would face. This kept her in the loop for all the details of the inter-planetary journey her husband would be making. It also gave her near-daily reasons to rant against someone or something.

Becker had been forced to sit down with Roger and Abby together in their home and have a serious chat about division of responsibilities. Together, he and Roger finally convinced Abby to let the experienced NASA staffers do what they did best. She seemed bent on managing the entire mission from her coding terminal, but in the end they convinced her that was impossible, and for the last few months she had shown remarkable forbearance even when alarming bugs cropped up.

Each of those bugs was squashed in due course, and by launch day Becker was upwards of ninety-nine percent confident in all of the complex systems working together toward the goal of this mission. Now, as he watched Nelson calmly sitting in the X-57's cockpit, and when he gazed out over the sea of control stations manned by the smartest people in the entire world, he felt nothing but optimism for the outcome.

This would be mankind's finest hour. He was sure of it. And it was a humbling, inspiring thing to be a part of.

In the cockpit, Nelson grinned when he noticed a small card affixed to a nearby control panel, placed outside his critical line of sight but close enough to act as a reminder. It was hand-written in his wife's loopy scrawl, and said "I'm watching you all the way."

He appreciated the gesture immensely, but also found the wording funny. It was a touching reference to her commitment to undergo this journey

alongside him, even if she couldn't be there physically. But it also carried a hint of her obsessive reach for control, as if her furious surveillance of his every move would continue into the outer reaches of the solar system and there was nowhere he could go that she would not be watching.

He resolved never to mention that reading of her note. He also wondered what she'd had to do to persuade the support crew to leave it there for him. She really was unstoppable sometimes.

NASA was talking in his ear again. They had never stopped, actually, but he had tuned out momentarily. That jolted him out of the zen-like state he'd entered for the past few minutes. In another moment, mission-critical events would start happening in quick succession, and if he zoned out for one second he might cause an error that would kill him, or even worse, scrub the mission.

He quickly responded to the request from Launch Control and transitioned the onboard computers to launch configuration. Then he blinked a few times, steeled his mind and heart against further flights of emotional fancy, and became Commander Nelson, a near-robotic servant of the greater mission, a precision instrument of flesh and brain just as reliable as the A.I. that was onboard with him.

Outside, fuel cells began thermal conditioning and vent valves were closed. Becker and his team gave their final "go" responses, and the automatic ground launch sequencer began. It was all Nelson could do to still the beating of his heart.

The access arm retracted and the tower tilted away from the rocket.

The auxiliary power units rumbled to life.

Commander Nelson closed and locked his visor.

A light came on, indicating that power had transferred from the ground to the Magellan's internal systems. The main engine burnoff system activated.

The main engine started.

T minus zero. The solid rocket booster ignited, and the Magellan achieved liftoff.

Goodbye, Abigail.

4 – Starstruck

There was a young boy sitting alone in the very front section of the darkened theater. His brown hair was cut short, while the heads of the other kids in the theater hung long with retro-chic yearning for cool. And while they were all snacking and telling whispered jokes to each other as they glanced down at their glowing pocket devices, this boy gazed up at the screen with dark eyes wide.

The film was visionary, an epic that spoke of both desperation and aspiration, one designed to remind a jaded and distracted audience of the power of pioneering individuals and the effect they could have on the course of human progress. It included just enough thrills and danger to keep a boy on the edge of his seat, but had enough deep science to make him wonder at the mysteries of space travel off-screen, in real life.

And for young Roger, it was his fourth viewing. He'd spent all his money on the last few tickets, but had successfully begged another ten dollars from his mother to come to the theater on his own this Saturday afternoon. His father had scowled and suggested a more productive use of his time, but his mother had backed him up. "It's good for him at this age," she laughed. "He loves science, he loves space. There's nothing wrong with that. Hey, maybe he'll grow up to be an astronaut."

Maybe, Roger thought, sitting in the theater. *Maybe!*

At that young age, Roger—the awkward kid with the old-fashioned name and the inability to see why his peers were so easily distracted by lesser things—didn't catch the irony in his mom's joking prediction. He didn't know that great-grandparents had begun to say the same thing back when Sputnik had first ignited the Space Race, and that by now it was a winking way of expressing the fondest hopes for one's children in spite of more realistic expectations.

But he knew that if he could make it a reality, he'd be like those heroes on the screen. And he'd able to one day look back and remind his mom of her words. He would be a hero himself, indisputably.

He would *matter*.

Years later, during a rare training break in the lead-up to his history-making solo mission, Roger watched the film again, this time with Abigail at his side, the two of them embedded in a deep sofa in their basement. As the

familiar scenes played out in front of him, his mind traced the patterns of his life back to that point—a turning point for him, he now realized.

It was after this film that he began playing every space simulation he could find, and trying his best to read through technical manuals released online by NASA—more of the former than the latter, but he made an effort. He did “astronaut pushups” in his room alone every night. He dragged his mom to a recreational vertical wind tunnel attraction so he could experience an approximation of zero gravity. And when he was fifteen, he traveled to California to watch the launch of the first private manned mission into space.

Another turning point came soon after college, when he turned away from a business opportunity and instead joined the Air Force. That was his first real step toward his dream. It had filled him with fear at first, especially when he saw the uncertainty in his father’s eyes. But later, when people all around him began to take him at his word when he said he was going to become an astronaut, he felt a surge of confidence. And now, with the launch date rapidly approaching, his father had become one of his most ardent supporters.

Roger heard a gentle snore and looked over at his wife, blithely sleeping through the film’s climax. She was another turning point, perhaps the final one without which he’d never have made it this far. Abigail came on board just as he was getting out of the Air Force. The cute young lady with the dark hair and eyes had him at the word “NASA”, but it also helped that they both loved chess, hiking, and stargazing. Her support and enthusiasm sped up his professional development exponentially, and soon he found himself in exactly the kind of role he’d hoped for: testing experimental craft at one of NASA’s Florida facilities.

But then another economic and political downturn had put space funding through one of its periodic lulls. Abby was still happily engrossed in the advances her division was making in A.I. control systems, which had commercial uses well beyond space missions, but privately Roger had to wonder if he’d made the right choice.

He’d agonized over it for months. Was any of this going anywhere? What were the chances? Maybe those guys in the private sector had the right idea. If he stayed with NASA waiting for something to come along, would he grow old and lose his sense of wonder without ever playing a part in the exploration of all that lay beyond Earth?

Thankfully he’d plowed through. He went to work every day, he

represented NASA at occasional seminars, and he kept a telescope by his patio door. He lived life, all the while unaware of what was coming. Something kept him in the game, some inner light that burned in spite of frustrations and dull years. This inner sense kept him sharp, kept him hungry.

Some might have called it faith. Nelson preferred to call it dedication.

He turned off the movie before it reached the end, and settled back next to Abigail. He had his own ending to act out now.

5 – Into Stasis

Orbit.

It was a strange little word, from the Latin orbitus, circular. But it fit: the X-57 and its parent vehicle, the Magellan, were being flung around the earth in a 17,000-mile per hour circular trajectory that would take them out into space in the direction of Saturn.

Having shed the solid boosters with their massive external tank, the X-57 joined had joined the much larger craft and taken its place docked at the forward junction of the Magellan. Made up of two concentric spoked rings that rotated on a long central shaft to give gravity and electric generation to the interior crew space, the Magellan wasn't particularly sleek. But it was both elegant and functional, and it was now coming up on its exit window.

At a word from NASA, and a visual confirmation check on the computer model, Nelson brought in a pulse from the directional thrusters, and the Magellan was away from Earth and moving outward into the solar system. Computers confirmed that the course was accurate, and a series of computerized pulses from the ion thruster in the rear sped it on its way.

Inside the crew area, which consisted of the X-57's cockpit and a larger room beyond its docking hatch where a small laboratory was located, Roger floated gently through the air. It was his first true zero-g experience, and all too soon it would be over. When he awoke, the spinning of the Magellan's rings would provide a measure of artificial gravity so he could walk around in the cabin and accomplish his mission duties in a more standard human environment. For now, he took a moment to enjoy the weightlessness and revel in the audacity of his new role.

Only a few people had come this far from their home planet. By the time Nelson awoke from stasis, he would be the only human ever to venture as far.

Abigail sighed audibly over the comms system. "Roger, I asked them to let me do a remote upload to fix a little bug on one of your monitors that makes it flicker under certain conditions. It was denied."

Nelson smiled. "Don't worry about it, Abby. To make a launch on this timeline, sacrifices had to be made. I'm just glad it wasn't related to life support."

"Not funny, Roger."

Becker's voice cut in. "Hey, in my defense, it was really the Chinese

driving the schedule here. Otherwise we'd have had a full three years to do this."

Roger flipped a switch to turn all systems to auto while he drifted back through the craft toward the rear where the stasis box awaited him. "Speaking of our Asian friends, how did their launch go? Any word?"

"Delayed until morning for technical problems. Secretary Stewart is ecstatic."

Nelson left the X-57 cockpit area and passed through a hatch to the rear cabin, part of the Magellan itself. The stasis box, a long coffin-like compartment that was white and sterile like the rest of his new home, ran along one wall, across from the lab equipment.

The stasis box had a small window where his face would be when he lay down in it. There was no one else to look in on him, of course, but during testing for the new technology one unlucky man had awoken prematurely and nearly suffocated himself in panic. The kindly, benevolent engineers had put the window in so that if it happened to Nelson, he would see out into the spacecraft's interior and be able to orient himself and remain placid until the box opened.

Nelson opened a cupboard in the wall to retrieve his stasis garment, and then set about the awkward task of changing clothes in zero gravity. He found that he had to hold on to one side of the stasis box while he used his other hand to wiggle into the thermally-regulated garment. Then he turned and pulled himself toward the long white box. It took all of his professional resolve to put aside his personal aversion to the sarcophagus (early technical manuals had actually used that word) and move himself into its icy, padded depths.

"I'll dream of you often, Roger. I know I will." Abigail's tone was heavy, choked with emotion. It surprised Nelson; he would have thought she'd be controlling herself more tightly in front of everyone at Mission Control.

"And I of you, Abby."

"No, you won't," she corrected him with a trace of bitterness in her voice. "You don't dream in stasis. For you, it'll be like waking up after a quick nap. But it will have been eighteen months for me."

Nelson sighed. "I love you, Abigail. Be strong."

He looked up just before inserting the second of two I.V. tubes into his arm, distracted by a flash of something blue on a nearby wall-mounted

screen. It was the Earth, which had just come into view on the camera that looked out over the Magellan's rear thrusters. Nelson froze, staring at the planet he was leaving behind.

He was transfixed. Enamored. It was a beautiful world, and it was shrinking slowly into the distance, swallowed by a growing spread of black around it.

“Commander Nelson, are you preparing for stasis?” Becker was obviously monitoring his signals very closely.

“Sorry. Got distracted by the view. You have a wonderful planet, there. Keep it that way until I get back, okay?”

“You got it.”

“And Becker? Take care of Abby for me, all right? Take good care of her.”

Abby's reply was quick. “Hey, I'm still here, Roger. And I can take care of myself just fine.”

Becker laughed. “If by 'take care of', you mean making sure she has her own key to the Comms Center and can check on you or record a message for you any time she wants, then yes. I've got it covered.”

“Thanks. That's exactly what I mean. Abby, we'll start that long-distance chess match when I wake up. Until then, farewell.”

He attached the respiration hose to his mouth and lay back in the stasis box, then pushed the button to begin closing it. Frigid liquid bubbled into the container near his feet, merging around his body as Abigail's reply echoed through the rear module.

“You'd better come home, Roger Nelson. Do you hear me?”

He couldn't reply. Instead, he concentrated on breathing evenly and deeply as the sedative gases filled his lungs and settled his brain into a deep, low-energy state.

The stasis box's lid closed with a hiss, enveloping him in darkness, and the liquid filled in around his head and shoulders.

Outside the box, the comms speaker uttered one last whispered plea, but it couldn't penetrate the stasis chamber.

“Come home, Roger.”

6 – Titan Approach

It was eighteen months later, to the day, that the white box again slid open. It divulged its occupant, coughing and shivering, onto the floor next to it. Nelson stood for several seconds, struggling to get control of his body's new breathing rhythm and fighting the strangeness of a circulatory system that was just returning fully to life after a year and a half in hibernation.

The Magellan was silently moving through space at immense speeds, but from the view on the monitor and judging by the feel of the floor under his feet, it appeared stationary. Gravity felt good after so long floating in the viscous liquid of the stasis box. Nelson raised his eyes, blinking away chilly droplets, and noted the steady rotation of the ship’s rings on a monitor nearby.

Earth was no longer visible to the rear. On another monitor showing the view out the cockpit window, however, Saturn loomed large and pale with rings sweeping into view at a scale that photographs had never done justice to. It was a sight that would have been breath-taking if his mind and body were fully awake, but he felt numb.

Hoping the sensation would pass quickly, Nelson tugged a Mylar blanket and a small towel from a compartment in the wall by the box. Time enough for Saturn and its moon in a few minutes. He sat and closed his eyes, willing his body to normalize. A low background hum was the only sound in the ship aside from Nelson’s breathing.

“Good morning, Commander Nelson.” The voice broke the silence with even, measured tones, fading into life just slowly enough to avoid alarming the Magellan's solitary crew member, but maintaining an encouragingly professional sound.

The disembodied but well-spoken voice belonged to the ship's A.I., which Nelson knew as Ferdinand from his training sessions. The name had come from Abby's team, and was an obvious choice for a ship named after the Portuguese navigator who had first circumnavigated his planet.

Nelson knew the voice was programmatic, inhuman, unreal. But it was comforting nonetheless, as Abby's team had meant it to be. A.I. had come a very long way in the last several years, thanks in no small part to Abby herself. “Morning, Ferdinand,” he responded.

“How are you feeling?”

Nelson sighed. “All right.”

He opened his eyes and blinked as he looked around at the space he was in. Every centimeter of the flat walls and flooring was white, except for a stretch of insulated cladding along two of the walls near the low ceiling. The walls sloped at the corners and were studded with cargo bins and panel lights. He could see the cockpit area through the hatch that marked the boundary of the detachable X-57 Lander portion of the ship, with its blinking console lights and black pilot's chair. Near at hand were cargo containers and the stowed equipment around the stasis box, as well as the small laboratory facility he would use later to examine whatever could be brought back from the surface.

There wasn't much to it, but it was his home and workshop for the next several years.

Reaching out to the wall, he pulled a medical kit from a compartment and took a roll of tape and a swab from it. "I'll feel better once I get these tubes out of my arm," he continued. "But my brain is starting to function again, so that's good."

"I'm glad to hear that, Commander. Please proceed with attaching your health monitors."

Nelson took a pulse oximeter from the cabinet and attached it to his finger tip, then velcroed a pressure cuff to his arm. "Hey, Ferdinand, are you still working on your chess game?"

There was a puzzled silence, carefully timed to convey confusion where the A.I. lacked body language. "I am well-versed in the game of chess, sir."

Nelson looked up, but his eyes found nothing to focus on. The voice came from linked speakers embedded in every surface of the ship's interior. He realized that conversing with the computer alone would take some getting used to. In training, there were always others listening in and watching him, which changed the dynamic, leaving openings for jokes and side comments. Now it was just he and Ferdinand. "I guess they wiped your training memory. You and I had some good chats during mission rehearsals. But don't worry about it. I'm feeling a bit wiped myself."

"I understand, sir."

Nelson rubbed his eyes. He was finally starting to feel awake now.

"I need a complete systems report, please."

"All systems are currently nominal, sir. Number of Single Event Upsets total six, with minor software corruption and zero hardware

malfunctions. Software corrected without further incident."

Nelson nodded his satisfaction, confident that Ferdinand would see the motion through one of the fish-eye lenses in the corners of the spacecraft interior.

"Eleven days ago there was a momentary glitch in the water circulation unit that caused the cabin humidity level to drop four percent," Ferdinand continued. "But an auto-restart on the unit fixed the problem."

"Keep an eye on that for me," Nelson said, carefully pulling out the I.V. tubes connecting him to the stasis unit. "I don't want to be getting chapped hands in here."

"Commander Nelson, you have removed your stasis I.V. prior to completion of health monitoring."

"Sorry, Ferd. Almost done?"

"Thirty seconds of monitoring remain, sir."

"Good enough. I feel okay." Nelson bandaged the puncture point with medical tape. Not even a drop of blood had made it to the surface of his cold, retracted skin. "What's our current position and ETA?"

"We are approximately 8.49 astronomical units from Earth, and will be intersecting Saturn's planetary orbit in just less than twenty-four hours."

"Excellent. What are we getting from the advance probe?" This stage of the mission had ended up including the delivery of a probe into orbit around Titan a few weeks prior to the Magellan's arrival, to monitor the area of interest on the surface and help in mapping the area and triangulating the signal.

"The T6 probe has completed an orbital survey and is sending its data to us live. I have maps available for you to study, and an approximate location of the signal's source."

"How accurate is that location?"

"Within four square kilometers, sir."

Nelson pulled off the rest of his health monitoring devices and stood.

"You appear to be in optimal health, Commander."

"Good to go. How many dispatches from NASA?" Nelson pulled on a pair of blue scrubs. He wasn't cold anymore; the interior temperature of the spacecraft was elevated to help him recover, but would automatically cool slightly before he got too warm. The onboard computer knew not only his preferred air temperature, but also the internal temperature of his body, and could anticipate desired changes. Nelson figured it was a matter of time

before the modern smart-homes included that feature in every room. Abby would probably already have it installed by the time he returned to Earth.

“There are currently two hundred and twenty-nine messages awaiting you.”

“Ugh. How many of those are designated 'important', Ferd?”

“All of them, sir.”

Nelson sighed.

He slowly made his way into the cockpit, past the white bulkheads with their cargo pouches and meticulously-labeled compartments. He eased himself into the pilot's seat and took stock of the controls, the light indicators, and the view out the window of Saturn and its small moon that was slowly growing larger. Mentally, it seemed like a few hours at most since he had left this seat and climbed into stasis. His body told him it had been much longer.

His fingers began playing across the controls, bringing up NASA's messages on the central screen. There were indeed hundreds to get through, but fortunately they were sorted by a combination of command priority, arrival date, and sender. One from Becker was near the top of the list, bold and slowly pulsing. Nelson opened it.

His wife's image appeared on the screen, in full moving color. She had a new haircut and was wearing a crisp outfit that suited her new look well.

Leaning toward the camera with a playful smile on her lips, she raised her eyebrows. “Are you awake yet, Roger? Come on, honey, I'm getting desperate here.” She pulled back in her chair and fixed the camera with a challenging stare. “Nf3. I'll be here all day.”

Nelson grinned. The first move had been made, starting with her knight, a classic opening. “Oh, it's on,” he said, and stood up to get his own chess pieces from his personal supplies.

He scooped up the lightweight set, a forward-thinking token from his wife and some cooperative shipboard techs, then went to the eight-by-eight grid painted on the bulkhead near the stasis box and began arranging the little magnetic pieces. It was one small concession to the fact that this ship had a human on board, and even if he would only be awake for a fixed number of hours at a time, he needed the psychological uplift.

Minutes later he made his play, a carefully calculated black pawn advancement, and replied to Abigail’s video message with his own. Then he leaned back, studying the board again.

“Transmission time is what, and hour and twenty minutes, Ferdinand?”

“One hour fourteen minutes. Would you like me to play a round with you?”

“No, thanks, Ferd,” Nelson said. “It’s the human element that matters here. There’s more to this game than shuffling pieces around on a board. At least, I hope so.”

The A.I. was silent, and Nelson briefly wondered just how far its human psychology programming went. Abby had obviously made sure the computer could play chess, but that was Machine Learning 101. Was Ferdinand capable of understanding nuances of human relationships?

“I’d better get through those dispatches before NASA calls. Let me know when we pass Saturn’s orbital path.”

“Yes, sir.”

Saturn loomed giant against the black outside the cockpit window. It was so vast, so much bigger than anything Nelson was accustomed to seeing, his mind had a hard time putting it into context. He imagined Earth next to it, barely a tenth the size, and he had to shake his head to keep a grip on reality. The gas giant’s rings stretched so far out into space, he couldn’t see their full breadth even by craning his neck from side to side and peering out the corners of the Magellan’s little windows.

“I’m actually here. I’m actually looking out at Saturn,” he whispered to himself. A smile crossed his face.

Then the smile faded as he remembered how distant he was from Earth, and how alone. Well—there was the voice of Ferdinand. But it felt stranger than he’d anticipated to know that no one, living or dead, had ever been where he was now. He was alone in history, alone on the ship, and so far from human civilization that it would take years to get back even if he turned around right at that moment.

Nelson reclined in the pilot seat and played through the various messages that had collected while he’d been asleep. NASA had compiled a series of brief mission status reports, but as Ferdinand had assured him, the Magellan was performing admirably and all systems remained nominal.

The news from Earth was more interesting. “Here’s one for you, Ferd,” he remarked, still trying to get used to the sound of his own lonely echo in the confines of the ship’s cabin. “Becker says the Chinese National

Space Administration sent their warmest congratulations on a successful launch. Apparently there was a whole video, but he didn't waste bandwidth with that."

"Indeed."

"The Chinese government must be pretty steamed," Nelson said, probing at his A.I. companion. "You think?"

"It is certainly possible that some of the upper echelon Chinese officials are privately upset that we appear to be ahead in the competition," Ferdinand responded. "You'll find another dispatch dated one-sixteen that states they have delayed their launch for a year, and announced that they will be setting a trajectory for Neptune."

Nelson raised his eyebrows. "Skipping Titan, hmm? At least it won't get crowded around here. I wonder if that changes our plans at all."

"Currently we are to proceed as originally ordered, Commander."

Nelson tapped a finger on the console. "Do you read all my mail, Ferdinand?"

"All transmissions must be sent through our encrypted channel to be decoded by the central computer, so yes—although I ignore the contents of any message marked CLASSIFIED."

"Good to know."

"We will reach our trajectory in ten minutes, sir."

7 – Breach

Abigail's day, while certainly full of excitement, was not going at all as she had planned. After a few chess moves and congenial exchanges with her recently awakened husband, she had been approached outside NASA's Mission Control Comms room by a man she recognized but hadn't expected a visit from. He was dressed in a classic government-agent suit and had a partner, also suited, in tow.

"Mrs. Nelson, a moment of your time, please."

The partner casually positioned himself to the side, blocking Abby's path down the hallway without seeming overtly threatening.

"My name is Timothy Jacobs, and I'm a Counter-HUMINT case officer with the Central Intelligence Agency."

Abby's mind was blank. What did that even mean? "You're from the CIA?" she asked, incredulous.

She vaguely recalled a meeting with Director Becker and some other NASA, DoD, and JPL employees where they discussed security concerns with the mission and the A.I. she was working on, specifically. She might have recognized the agent from that meeting, but couldn't quite remember his face. There were a lot of people and he very much blended in as an anonymous government entity.

"I'd like to talk to you about an incident involving some digital traffic on your personal home network. Would you step into the conference room for a moment?"

Abby eyed the room he was pointing to. It had clear glass windows all along the hall, so she didn't suspect any funny business. The question was whether she should ask for Becker or someone to attend this impromptu meeting with her, as a legal precaution.

At that moment, the Secretary of Defense came around the corner and up the hallway. His assistant was in tow, and another tall man in a suit was with him. They both spotted Abby at the same time and slowed as they approached.

"Ah, there you are," the Secretary said with an obvious undertone of distaste. "This is Commander Nelson's wife, boys," he told the agents. They nodded coldly. "Mrs. Nelson, you're going to need to cooperate with these gentlemen. We have a security problem, and you're… involved."

"So I heard," Abby coolly managed. "Let's get this over with."

She entered the conference room and the two officers who had originally approached her followed, while the Secretary and his entourage stayed out in the hall.

"So what's this about?" Abigail asked, standing by a chair just inside the room. The words came out harshly, but she stared unapologetically at the two men.

Agent Jacobs, obviously seeing that long introductions and invitations to sit down wouldn't get very far with Abby, dived right in. "Mrs. Nelson, yesterday evening our cyber security team detected some activity on your home network that was flagged as a potential breach by malicious third parties. You'll recall that in the waivers signed when your husband took the mission with NASA you consented to monitoring of your network traffic." Abigail said nothing, but her glare was hard and cold. Jacobs continued. "We were able to determine that the activity originated from a server in Asia, and we believe it was indeed a hostile intrusion. Hard drives connected to your personal network have been compromised, and in attacks of this nature we also generally expect to find evidence of key loggers, surreptitious remote use of webcams, and email intrusions. That often leads to illegal activity on your bank accounts and other identity theft issues, although we haven't detected anything like that so far in your case. We did take the precaution of freezing your credit and putting a hold on your bank accounts, to avoid further damage."

Abigail's lips were pressed into a thin line. "This is not news I wanted to hear, today of all days. Why did you come here to tell me this?"

Jacobs cleared his throat. "Mrs. Nelson, it's crucial that we understand whether you've had any direct contact with foreign agents. Have you been approached by anyone recently that has tried to befriend you, find out details about your husband's mission, or pressure you into taking any actions you wouldn't otherwise have taken?"

Abigail was about to fire back a withering reply, but she controlled herself and thought for a moment before replying. "No. I mean, I'm approached several times a day by people that want interviews, or want me to write a book or something. I have entire email accounts full of requests I ignore. But personally I've kept to myself—we've had a major mission to organize around here, in case you weren't aware. I certainly haven't had conversations with anyone about anything… secretive."

Jacobs asked a few more questions and then thanked her for her time,

assuring her he would stay in touch regarding the cyber intrusion and any steps she should take. Then he and his partner left as suddenly as they had appeared.

Abigail remained in the conference room, sorting through the difficult emotions that were now swirling through her body. Although she wouldn't even admit it to Becker, putting on a good face for her transmissions to Saturn had been one of the hardest things she'd done in many months, and she felt exhausted. She'd answered the CIA officers' questions truthfully. But the revelation that, in addition to all the personal difficulties and the terrifying publicity she had to deal with, she was now being targeted by malicious forces was nearly enough to undo her.

Becker found her an hour later in the same conference room, sitting with her head resting on the table, her face a mess of mascara and tears. After a brief conversation, he sent her home to rest and told her he would call her with news about Nelson's progress on Titan.

8 – Titan Landing

Nelson was strapped into the pilot seat again, now wearing his flight suit.

“Target will be achieved in one minute. We have a slight overshot on our trajectory curve, so NASA recommends we be ready to fire additional retrorockets manually for a last-minute readjustment.”

“I'm on that, Ferd. Keep it on my screen.”

“I can handle that automatically, sir, if you—”

“No, thanks, I'll handle it. Just make sure the retrogrades are primed, please.”

“Certainly. The check is complete and all systems are ready. We are entering orbit around Titan in ten, nine, eight, seven, six, five, four, advise slight adjustment nose left...”

Nelson gently fired the directional thruster, and a burst of bright flame pulsed from the front of the Magellan, slowing the ship and edging it slightly to the left. “Beginning roll maneuver.” He slowly cranked the joystick in front of him and the ship turned so that Saturn's yellowish, overcast moon appeared directly above him out the cockpit window.

Nelson stared at it in awe. No human had ever seen it with the naked eye at this kind of range. He was officially in uncharted territory now.

“Stable orbit achieved, sir. Taking thrusters off-line.”

“All right, Ferd. Tell me everything I need to know about Titan.”

A small flood of infrared images of Titan's terrain, taken by the advance probe several days earlier, appeared on the console's main screen.

“These are images of the northern polar region, sir. It's covered by numerous lakes of liquid methane and ethane. The closer shot shows the area most likely to contain the signal's source. The probe pinpointed it to within four square kilometers near the lake called Punga Mare. When you get through the atmosphere you should be able to hone in on the signal with a greater degree of accuracy.”

“Punga Mare, huh?” Nelson replied. “So are these the ice flats I'm looking at now? Might be a good place to land.” A series of still images of white patches spread across the surface of Titan had appeared on his screen.

“That's correct. The ground will be reliably solid near the ice flats, although we have high confidence that the lander will handle a liquid landing in any event.”

“But the signal is probably coming from solid ground, right? If I were leaving an artifact for someone to find, I'd fix it firmly to a geographic point. The ice flats don't ever melt, do they?”

“Surface temperature on Titan is stable at negative one hundred seventy-eight degrees Celsius.”

Nelson whistled. “Negative one-seventy-eight? So I should keep my suit zipped up for this one.”

“That will be required for survival on Titan, sir.”

“Yeah. So, four square kilometers isn't exactly a small search grid. Even if we reduce that to one kilometer once I get down there, I might be hunting around for a while if the transmitter doesn’t have a giant antenna sticking up. I'm gonna say that our best bet is to land in the middle of the grid and spiral out from there to have the greatest chance of finding the source quickly.”

“That is a reasonable plan, sir, although it doesn't allow for complete coverage at a hundred percent accuracy.”

“Yeah, but it'll get the job done quicker. How long is our window open for Neptune?”

“Ideally, six hours. After that we'll have to dip into reserve fuel to catch up.”

“Right. I want that fuel for later. There's no telling what we'll get into farther out in the solar system. So this time around let's hit it quick and be back up before the window's gone.” Nelson searched through additional screens on the console, putting numbers together and forming a detailed plan in his head. “And if I can land right at the edge of a methane lake, I can save time refueling the lander. Just drop a line into the lake instead of waiting for methane air extraction. Is that feasible, Ferdinand?”

“Yes, as long as impurities remain under six percent in the lake.”

“We won't know that until I'm down there and get a hose into the liquid. But if it works, it could save me an hour while I'm out searching. Definitely worth a shot. How close are we to the Titan entry window?”

“Twelve minutes, sir.”

“Okay. Any change in the signal?”

“Still transmitting at regular intervals.”

Nelson busied himself at the controls, but was interrupted a moment later by a notification on the console.

“Sir, we have a received a video transmission from Mission Control.”

“Play it, Ferdinand.”

Director Becker's face appeared on the monitor. “Congratulations on your safe arrival at Titan, Commander. This is a landmark of human exploration. Of course we're all watching closely and very excited for the landing. Abigail wanted me to convey her congratulations as well.”

Becker went on, talking about the importance of the mission and the scope of media attention they were getting for it. But Nelson's mind lingered on that last line. Where was Abby? She had been playing chess with him earlier, and although they'd only been able to get a few moves in before he had to prep for the landing, she had seemed in good spirits.

He had to put those thoughts aside, however, as the landing procedure began. Several minutes later, the X-57 Lander portion of the Magellan, where his cockpit was located, detached from the body of the interplanetary spacecraft and began to descend toward the moon's surface.

Ferdinand's voice came through even though Nelson was now physically disconnected from the processing stacks that housed the A.I. It was slightly rougher with static around the edges, but still clear enough to hear easily. “Commander, as you may recall from briefings, we anticipate data relay issues during the landing and on the surface. The lander is equipped with its own onboard A.I., named Neil, which will engage while the lander is detached.”

A new voice chimed in, clearer than Ferdinand's. “Hello, Commander Nelson! This is Neil.” It was a spunky girl's voice. Definitely not Abigail's, but Nelson was sure she had chosen the voice. It wasn't something Becker or the lead engineers would ever do.

“Uh, hello, Neil. I wasn't expecting you to sound so... enthusiastic.”

“It's for morale, Commander!”

“Did my wife program you?”

“In part, yes.”

Ferdinand's voice now sounded stodgy in comparison. “Our comms link is degrading. Neil will... things from... on.”

The X-57 began to shake as it entered Titan's atmosphere, and the view out the window was slightly obscured by super-heated air.

“We've lost contact with the Magellan, sir,” Neil chirped. “Entry velocity and atmospheric conditions will continue to make it difficult to establish a connection until we return. But the turbulence we're experiencing is well within acceptable bounds, and all systems are nominal!”

The lander's A.I. sounded like she was having a great ride. Nelson rolled his eyes. “Thanks. Just let me know if anything goes wrong. And please keep a map of the landing zone on my screen.”

The map was updated live as the ship moved toward the surface, and a video of the terrain below was overlaid on top of it, taken from a belly camera that used enhanced imagery manipulation to cut past the blast of fiery atmosphere.

“Give me a visual target just west of Punga Mare, on the shore line.”

A red targeting reticle appeared on the map.

“Okay, time to slow this down, Neil. Engage the landing cycle and prime the VTOL thrusters, please.”

“Roger that, Commander! Priming VTOL's now.” The A.I. made it sound like she'd never had an order she wanted to follow as much as this one, and he knew she'd sound like that every time. It was going to grate on his nerves. He wondered how Abby had convinced the engineers it was a good idea to make Neil so peppy. Morale, indeed.

“Almost in target range. Firing retro thrusters manually...”

The X-57's thrusters thundered to life, rapidly slowing the ship as it raced toward the shiny lake on the planetoid's yellowish surface. These were powerful rockets, a far cry from the gentle ion thrusters that propelled the larger ship through the vacuum of space.

“Two hundred meters to target, sir,” Neil said. “VTOL engines are primed and ready to go.”

“Engage VTOL's.”

“Copy that! VTOL's engaged!”

A set of Vertical Take-off and Landing rockets fired just as the lander came within dangerous proximity to the ground for the speed it was falling at, and the g-forces pushed Nelson into his seat hard.

“One hundred meters to target. Slowing... descent rate ten meters per second.”

Nelson edged the joystick forward, sliding the ship closer to the water. He wanted to be able to get the fuel hose into the lake without picking the ship up again. Lifting off from ground took the most fuel, and he didn't want to waste anything.

“Fifty meters... forty meters... thirty meters to target.”

The barren terrain of Saturn's moon grew bigger on the screen in front of him. The lander tilted up slightly to engage its VTOL's as it came in

at an angle, leaving only clouds of methane gas visible out the cockpit windows.

"Twenty meters. Slowing descent to three meters per second. Ten meters."

The X-57 flattened out and gracefully came to a standstill, hovering just off the surface of the shoreline.

"Landing gear is deployed and ready, sir."

"Okay, let's set her down, then," Nelson gasped, surprised at the force of the landing on his body. He should have engaged the retrorockets sooner or let Neil handle the descent, but he wasn't about to cede that much control to the machine.

Nelson could both feel and hear the crunch as the lander settled onto the yellow-tinged ice flat, its broad feet coming to rest on the frozen gravel underneath. In the distance he could see brown, rocky hills breaking up the horizon. Beige clouds swirled around the ship and overhead, obscuring the sky where he knew the Magellan waited in orbit.

"Touchdown. We have touchdown on Titan!" Neil resounded.

"Yes, we do," Nelson replied with a sigh.

9 – The First Beacon

Suited in full astronaut regalia, Nelson stepped out of the lander craft onto the surface of Titan. His breath collected on the transparent globe in front of his face, obscuring his vision slightly with each exhalation. The suit quickly adjusted to the frigid external temperature and circulated additional air to the helmet so that the moisture disappeared.

The view was incredible. Directly ahead was a vast, perfectly flat lake of liquid methane. The low sunlight glanced off its surface at an angle that made it look like a shimmering field of light. Around its edges, the white ice spread out even flatter, until it rose in uneven jags to the rocky outcroppings that marked the beginning of the hilly terrain. One particularly sizable mountain in the distance held Nelson's attention as he tried to gauge its elevation.

“The signal's source is north-east of your current position, sir.” Neil, ever-present in his head and dying to be helpful, didn't seem happy with the long silence.

“Just taking in the view, Neil. It's the first time man has set foot on such a distant rock, you know. You’ve got a robotic cousin lying around here somewhere, but for us humans, this is a first.” Nelson hefted the bag of tools that hung from his suit, and took a few steps. The gravity was low, but sufficient to hold him down. If he recalled correctly, it was slightly less than Earth's moon, and an image of the Apollo astronauts bunny-hopping in the old moon-landing videos made him smile. He was well aware that his every move was being monitored, however, and every second of the video being recorded through his suit cam would be scrutinized by the entire world the moment it arrived at Earth, some hours hence. So he carefully walked forward to the lake, trying for an efficient grace in his movements. He had an alien artifact to discover.

Holding up a locator device, he passed it back and forth to see where its indicator pointed. It showed north-east, just as Neil had said, but the direction indicator wavered as he moved it. “All right. I'll get the fuel hose in, take a few samples from this location for the scientists, and then head out.”

“Copy that, Commander.”

It was the work of a few minutes to uncoil the fuel hose from the side of the lander and drop it in the liquid. It was made of a composite far more durable than rubber, and jointed so that the lake wouldn't flash-freeze it on

contact. Its built-in sensor confirmed that impurities in the lake were at an acceptable level, and Neil initiated the process to recombine the methane into usable fuel that would replace almost everything spent on the landing.

Nelson set off across the ice flat, following the lake's edge. He carried a hard sample case along with his tool bag and locator device. After moving away from the lander a few hundred meters, he stopped and turned around in a circle. “No sign of any giant radio antennae or artificial structures,” he said. “But the locator says I'm getting closer, so I must be headed in the right direction. In fact, the estimate is less than a hundred meters.”

Neil responded, but not with a perky comment on his progress. “Sir, communications with the Magellan were reestablished for a brief period, although they're out again at the moment. But a data packet transmitted from Ferdinand indicates that a sizable storm is approaching our location from the east, with high winds.”

“Okay. How high? Is it gonna knock me over?”

“Unlikely, sir! But the winds will bring rain off the lakes that will limit your visibility and raise the risk of combustion around the X-57 lander. It may impede our takeoff schedule.”

Nelson recalled from briefings that although Titan’s atmosphere lacked the oxygen to make all of its methane catch fire, venting gases from the lander craft could combine with gaseous methane in the area immediately around it and cause a small flash-fire or explosion. Nelson couldn’t risk damage to the exterior of the lander, especially not this early into the mission. But he also didn’t want to be delayed on Titan and miss his window.

“Time of arrival?” he asked.

“Seventeen minutes.”

Nelson kept moving, eyes on the locator device in his gloved hand. “I'm getting close, Neil. Real close.”

He turned to the right, then back to the left, and heard a low beeping tone from the indicator. He looked up, facing directly out into the giant body of liquid methane. To the east, a towering wall of yellow clouds was fast approaching. “Oh, no,” he muttered.

“I didn't copy that, Commander.”

“The signal is coming from the middle of the lake, Neil.”

“That makes sense. Punga Mare takes up about sixty-eight percent of the land area in the target region, and—”

“I wasn't planning on getting wet,” Nelson interrupted. “Any idea how this suit will stand up to submersion in liquid methane?”

“It's designed to withstand the vacuum of space, sir. As long as you don't rupture it on a rock you should be okay. Be advised, though, that you'll sink much more quickly in this lake than you would in water on Earth, and you'll have a harder time swimming. But the good news is that the low gravity should allow you to climb out again easily.”

Nelson considered his options as he gazed at the lake's shining surface. “I don't suppose we have any way to get a look at the topography of the lake's floor? See how deep it gets?”

“No, sir. Not from here. The liquid seems to have blocked our probe's initial survey of the terrain.”

“Okay. Just gotta take the plunge, I guess.”

“Good luck, sir.”

With the disquieting knowledge that if he ran into trouble in the lake, the nearest person that could go in after him was over a billion kilometers away, he took a step into the liquid. It pooled around his boot, but he couldn't feel any sloshing. The thin liquid seemed to move out of his way as quickly as he pushed his foot forward. Taking a firm hold on his locator device, he started walking slowly and carefully, probing for any sudden drop-offs.

There were none. The lake was only inches deep, and fifty meters out into it there was still no variation in its floor. The locator flashed rapidly at him.

“Neil, the locator says I'm right on top of the signal, but I don't see anything.” Nelson looked all around, wondering what he was missing. It would be awfully embarrassing if he was standing right next to some obvious sign and just hadn't noticed. They would replay that clip for years to come, with generations of schoolkids laughing at him.

He took a few more steps, purposely disturbing the liquid's surface so he could see more easily. The sunlight filtering through the clouds was dimmer than on Earth, but still lit up the lake with a glare that would have pained him if he didn't have his helmet's solar shield in place.

Suddenly, he stopped and reached down into the liquid. There was something just under the surface of the lake, something rounded and out of the ordinary for this flat terrain. His heart beat faster as his gloved fingers closed around it. The exterior of the baseball-sized object was smooth. He tugged and the object came out of the ice crust under the liquid without much

resistance. Methane flowed off of it, revealing a simple geodesic sphere made from a rippled material that was slightly iridescent.

"Neil, I think I found it. Yeah, I found it!"

"Fantastic, sir!" Neil responded warmly. This was followed quickly: "The storm is coming in fast, sir. Please return to the lander immediately."

Giving the sphere one last look, Nelson tucked it into the transport container he had brought, and stooped again to fill a sample vial with liquid from the site. Then he turned and hurried back the way he had come. The clouds moving in from the east were darker than before, and were visibly closer. Judging the speed of the storm against his own speed, Nelson realized he might not make it.

"I'm coming, Neil. I'm almost there."

"Don't forget to retract the fuel hose, sir."

Nelson cursed under his breath and broke into an awkward run. Figuring out how to run on alien terrain in low gravity with the bulk of a space suit around his legs was a challenge he had not trained for, and a stumble would be costly. He concentrated on his feet and forced himself to slow enough to avoid falling.

Finally he reached the lander. He quickly deposited his hard case into the craft and then moved to where the fuel hose connected into the craft. He grabbed the hose and began dragging it out of the lake hand over hand, but it retracted into the ship at a snail's pace. The clouds were on him now, and a harsh wind swirled around the X-57.

"Neil, prime the VTOL's! We're going to have to get out of here in a hurry."

"Yes, sir!" A loud hum from the rear of the craft penetrated his helmet.

With the hose finally secured, Nelson climbed into the lander's small rear airlock and shut the wind out. He waited a few seconds for re-pressurization, then threw the interior door open as soon as its light showed green. He lunged forward and swung himself into the pilot seat, pausing only to open his helmet's solar shield up so he could see the controls more clearly. "Full power, Neil. Let's launch as quickly as we can!"

"Negative, sir. This wind has created an unacceptably dangerous mix of gases around the ship's exterior. We can't risk igniting rockets now, and a launch in high winds would be extremely dangerous in any event! We will definitely have to wait out the storm before leaving."

“What?” Nelson cried. “That’s not your call. We can still make it! I've got the world's most important discovery in this case here, and I'm not twiddling my thumbs on this moon because of a little wind!”

“I have to insist on protocol, sir. The danger level far exceeds acceptable risk to the ship at this time.”

Nelson knew he could override the A.I. with a third directly stated order. But he also knew that Neil’s repeated resistance indicated a hard line beyond which he might not survive if he pushed his luck. “How long until the storm clears?”

“Unknown. Communications with the Magellan are still out and I'm receiving no further data from Ferdinand.”

Nelson sighed. “We'd better not miss our orbital exit window.” He looked out at the storm as it raged around the lander. Methane rain began to pelt the glass, and the sound of debris being picked up off the crusty ground and ricocheting off the sides of the ship made him flinch. He punched the seat of the pilot chair with his gloved hand in frustration.

“You seem distressed, sir. How are you feeling?”

“I'm fine, Neil. I'm having a great time. Thinking about having a picnic in here.” He exhaled slowly. “That was sarcasm, by the way.”

“Unfortunately, I'm not programmed to respond to complex emotional needs,” the A.I. replied, its enthusiasm significantly muted. “Perhaps Ferdinand will be able to assist you when we return to the Magellan.”

“Maybe, Neil. Maybe.” Nelson reached back and retrieved the sample case from where he'd secured it, and set it on his lap in the cockpit. “Are you still receiving the signal from this thing, Neil?”

“Yes, sir. Loud and clear. Please be advised that guidelines from Mission Control require safe storage of all artifacts immediately upon collection.”

“Right. Are there any particles coming from it, any radiation that you can detect?”

“Just the radio signal. But mission protocol states that it is important to store it right away.”

“I know,” Nelson replied. He opened the case and stared at the ball, sitting innocently in its transparent sample container. It was sending him a silent message, one he couldn't receive with his biological senses, but which was real nonetheless. How could such a small object project a signal so far

through the solar system?

He checked that the cockpit was fully pressurized and the temperature was back up to habitable levels, and then he opened his helmet visor and removed the gloves from his suit. A faint smell of charcoal lingered in the cabin, and he wondered if he'd brought some dust in on his suit. The airflow inside the cabin was steady.

On impulse, he picked up the sample container and cracked it open to get a better view of the object.

"Sir, the properties of this artifact are unknown. I must advise you to exercise extreme caution in handling it."

Nelson reached out a finger and touched the ball to get a sense of its texture and hardness.

It instantly glowed where his skin came into contact with it, and the sphere emitted a loud tone reminiscent of the major chord he had heard in his first briefing. It echoed inside the lander's cockpit.

The tone was accompanied by a visual event. He could only describe it as a hallucination. An immense star field flashed through his mind, even as he was still looking at the object sitting in its container with his un-gloved finger touching it. He was still in the lander, still lucid, but the visual sensory experience was real and vivid.

He instantly retracted his finger in shock, but the image was so deeply impressed on his mind that individual stars still stood out in his memory. Startled and fearful, he dropped the whole container and watched as the sphere bounced gently on the floor and rolled to the side of the cockpit.

"What was that?" he whispered, stricken.

Neil picked up on his question and answered, though Nelson had really been asking himself. "The signal was interrupted momentarily, sir. The object seems to have responded to your touch!"

Nelson sat up and put his glove back on. "I really hope I haven't done something stupid. I just felt... drawn." He gingerly picked up the ball again, with no reaction this time. He placed it back in the secure container and sealed the lid, staring at it for another minute as the methane storm raged across the alien landscape outside.

Later he realized that when he had touched it, the ball felt slightly warm to the touch. Little more than room temperature in the cockpit, really, but after being emerged in liquid methane the ball should have been so cold as to freeze the skin of his finger. It was a foolish experiment, done without

calculation or caution.

10 – Stability Deficit

"As I said, we won't know what's happening until Commander Nelson returns the lander to the Magellan in orbit."

Several journalists were on site for the Titan landing, even though the whole thing was being broadcast live online. Becker had to step in to answer questions every fifteen minutes regardless of whether he had new information or any answers. The public affairs director had demanded it.

"Whatever's going on down there, he's well equipped for it. And don't forget—it's already happened! The delay is over an hour. He's probably already back at the Magellan as we speak. But if anything has gone wrong, well, we picked the man most capable of overcoming issues on his own. He'll be fine."

The reporters wanted a story, and the news that Nelson hadn't made his first rendezvous opportunity with the Magellan had nearly resulted in "Astronaut Nelson Stranded on Titan!" headlines going out. Hopefully, Becker's explanation would put the brakes on that.

A woman in a bright red jacket held up her recorder and asked, "What about Nelson's wife? How is she handling this news, and can we get a few moments with her?"

Becker sighed. All Abby needed today was reporters getting in her face. As far as he knew, she had gone home to rest and be alone, but he wasn't about to let the reporters know that. He checked his watch and realized he should have called her by now with an update on the mission progress.

"Abigail Nelson is a strong woman, one of our finest employees, and she's holding up well in the face of intense pressure and public scrutiny. I'd request that you give her some privacy and let her deal with the stress on her own."

"What stress?" the woman in the red jacket asked. "Are you referring to the possibility that her husband might not make it off Titan?"

Becker rolled his eyes. "Ma'am, we're still well within our mission parameters. We planned for a number of scenarios, and nothing has *gone wrong* at this point. We'll let you know as soon as we hear from the X-57 Lander. For now, I need to get back to Mission Control."

He ignored the clamor of questions that followed him into the hall, and walked quickly through the corridors. But instead of entering Mission

Control, he ducked into a conference room and called Abigail.

"Hey, Abby," he said after she'd picked up. "Everything is on track. Roger is still on Titan, but we expect him to rendezvous with the Magellan on its next pass."

Abigail breathed in and then out, carefully managing her response. "Thank you for calling, Gerald. I've had some time to sort out what's going on here, and there's nothing more to do at this point until the CIA gets back to me. I'd like to come back in and send another message to Roger."

Becker fidgeted with his phone. "Uh, we can do that, Abby, certainly. But are you sure you're ready? I think it might be better if you let us finish this phase of the Titan mission before you come back in."

"My husband will only be awake for a few hours, Gerald. I need to be there."

"Well… okay. But I'm going to send Matthew over to pick you up. There is a pack of ravening wolves in the media room and I don't think you need the limelight right now."

"That would be great. Thank you, Gerald."

An hour later Abigail was back in the NASA facility. She wanted to check in on Mission Control, but Becker met her at the door.

"Abby. Let's go to the Comms Center." He quickly closed the door behind him before she could even see inside. Immediately, Abby's senses were on alert.

"Gerald, what's going on? Have you heard from the Magellan?"

"No, we haven't. It's still not time. But Secretary Stewart is in there, and he's talking about barring you from access due to the security concerns that came up this morning. It's best if he doesn't know you came back in."

Abby had to fight to control her breathing again as anger flared up and joined the fear and insecurity threatening to spill out of her chest and engulf her whole world. She followed Becker to Comms and sat down in front of the recording station.

She closed her eyes, formulating the words she wanted to say for transmission to Roger. But when she opened them again and saw the camera that would carry them to him, she suddenly burst into tears.

Bent over, shaking with sobs, she put her face in her hands. Becker stepped forward and put a hand on her shoulder, and she turned and hugged him where she sat.

“Gerald,” she choked out, “please tell me he’s going to be okay.”

“Sure he is,” Becker gently replied, rubbing her back with one hand. “We’re still on schedule. He’ll be fine, you can trust him.”

“I don’t think I can do this,” Abby said, shaking her head, tears streaming down her face. “I’m just scared. I’ve never been scared before, Gerald. Not like this!”

“You don’t need to worry, Abby. Trust Roger. He’ll come through, I promise.”

“It’s not just the mission anymore,” she said, shuddering through additional sobs. “I don’t even know if I’m safe! CIA surveillance spotted a car following me home yesterday, and it waited outside well into the night. And I haven’t even told you about the dreams I’ve been having!”

All Becker could do was let her cry. He waited awkwardly with her for another ten minutes, wondering if he really had made a mistake in recommending Nelson for the mission.

If Nelson didn’t make it off Titan, it would be the end of everything.

11 – Rendezvous

“Sir, the winds have died down, but there is still a high amount of residual methane and hydrogen in the air around the lander. I can only detect trace amounts of oxygen at this point, but I would really suggest waiting until that clears away.”

Nelson re-sealed his helmet and gloves. Not that it would help much if an explosion ripped apart the lander, but it made him feel better, and it would help against the turbulence. “We're out of time, Neil. If we miss this launch window, the Magellan won't be in docking range for another three hours and we'll miss our window for Neptune. I will not be running behind all the way to Triton and risk compromising the mission there. Prepare the ship for lift-off, and ready the VTOL's.”

“Done, sir.”

Nelson ignited the rockets himself, and the X-57 picked up and then lifted away from the ground faster and faster. Nothing exploded. He waved as the ground disappeared from view. “Farewell, Titan,” he breathed. “We hardly knew ye.”

As the lander left the atmosphere Nelson got a visual on the Magellan, small and glinting in the sunlight, as it moved along its orbital path. He adjusted the lander's course with a small of thrust from the directional jets, and came alongside the larger ship. Docking took several minutes, but then the light went green and he mated the lander successfully with the Magellan’s cylindrical hub. When the hatch slid open he emerged eagerly from the cramped lander cockpit into the rest of the re-combined ship and stretched.

“Ferdinand! It's good to be back. You'll never guess what I found down there.”

“Welcome back, sir. I'm gratified that you found success on Titan. Our orbital window closes in five minutes.”

Nelson removed the sample container and artifact from the larger case, then stowed the bulky carrier in a secure cupboard in the ship's wall. “Roger that. Prepare the Magellan to depart Titan's orbit, and take a trajectory toward Saturn for gravity assist. You can handle the details.”

“Yes, sir.”

“And please queue up a new transmission on the main screen. I have news for NASA.”

A moment later, facing the camera in the back of the Magellan, Nelson spoke to the humans he knew were waiting with bated breath on Earth.

“This is Commander Nelson, reporting to Mission Control on a complete and successful mission to the surface of Titan. I located the source of the signal and recovered it for analysis. I've got it here aboard the Magellan with me now. I am preparing for immediate departure to Neptune, but first I’ve got to show it to you!”

He held up the sphere, nestled in its transparent box. It looked curiously small and unimpressive in the fluorescent light of the ship, somehow less mysterious and awe-inspiring than when he'd pulled it from the frigid lake on Titan's surface. But he knew that the knowledge of what it represented would command the world's attention anyway.

“It was submerged a few inches down in Punga Mare. Whatever this thing is, it's completely self-contained—no external power source or other equipment. Just this little ball.” Nelson held the box closer to the camera and steadied it to make sure the auto-focusing lens would get a good look at the object inside. “Still transmitting steadily, so it apparently doesn't draw its energy from the sun or anything on the surface. And it's not radiating anything detectable in here. I'll send over a full analysis once I'm safely en route to Triton and can run some tests. But I thought you'd want to begin your celebrations now. We've done it! Extraterrestrial artifact number one, right here in my hand.” Nelson couldn't help grinning widely. “Commander Nelson, out.”

He ended the transmission and sent it on its way, then began a new one, this time marked private for his wife. “Abigail, I did it! You aren't going to believe what I found on Titan. Becker will decide when and what to show, but... I did it! I found the source of the signal!” He knew he sounded even goofier than in his previous transmission, like a proud kid showing off his latest project. But he couldn't help it.

Ferdinand's voice broke in behind him. “Commander, we need to leave orbit in thirty seconds. Please take your seat for this maneuver.”

Nelson sent the message to his wife and hurried to the pilot's chair. He sat at the controls and strapped in as a pulsing countdown on the screen overhead neared zero.

“Fire the rocket, Ferdinand. Take us to Triton.”

Later, after hours of careful examination of the sphere and many photos from every angle, Nelson paused and rested against the wall opposite the work table. He stared at the sphere, now housed in a sealed glovebox that was dialed to a temperature and atmospheric pressure similar to that of Titan. The thing sat, quiet and unassuming, betraying no detail of its true nature.

He had measured it, shot x-rays at it, manipulated it with the thick rubber gloves that allowed him to reach into the interior of the sealed box. He'd even tried to chip and drill into it, but so far the object defied conventional lab procedure. He still didn't know what it was made of, what was inside (if anything), and how it was capable of transmitting such a powerful radio signal.

It was a puzzle, a tantalizing mystery, and Nelson did not want to go to sleep without getting a better understanding of the thing. But what was the next step to unlock its secrets? NASA's procedure manuals were the opposite of creative, and contained nothing more to suggest a new angle of analysis.

"Transmission from Mission Control, sir," Ferdinand said, breaking Nelson from his reverie.

"Play it. Should be from Abigail," Nelson replied.

Instead of his wife, Becker's face appeared on the screen in the corner near Nelson's workplace. "Congratulations on your discovery, Commander Nelson," the NASA director enthusiastically began. "This is truly a historic day! We are indeed celebrating here, and we eagerly await your full analysis of the artifact. Please make absolutely certain that you follow the procedures outlined in your mission documentation. Ferdinand can guide you through it as well. I cannot stress enough how important it is that you follow specific protocols now that you have the artifact on board. Things are getting a little testy with the Sec—with certain elements involved in this mission. Please take extreme caution not to taint the object or let it interface with the ship or anything outside of its secure testing environment." Becker paused for a breath. "We look forward to seeing the results of your tests. And again, congratulations!"

Nelson stood in thought for a moment after the transmission ended. He was bothered that Abigail was still absent, and upset with himself for breaking protocol already in touching the artifact on Titan. He was acting like a cowboy, and this was only the first leg of the mission.

Reluctantly, he hit the record command to send his reply.

"Thank you for the congratulations, and for everyone's hard work to

get me here, sir. My testing is progressing well and I'll transmit the measurements and imagery right away, although there's little else to report at this point—the sphere seems indestructible and immutable. I have no insight into what it is, or how it's transmitting. But I, uh... I may have touched the object, while on Titan. With my bare hand."

He swallowed, wondering if he should apologize. He decided not to. It was his choice, and he had to own it. Besides, he wasn't really that sorry.

"Becker, it reacted to my touch with a light and an audible tone! Nothing happens when I handle it gloved, but I'd like to repeat that little experiment soon, if I can, and record it for you. I realize this was a breach of protocol, and I hope it won't cause any undue turmoil. But you did send me on this mission because you respected my judgment, and I had no reason to believe the object was dangerous or capable of being tainted in any way. I will await your next transmission before proceeding with another such experiment."

He opened his mouth to say more, but then just sent the message. He stood up and shook his head, lapsing back into a thoughtful trance. His thoughts kept straying to Abigail. He angrily pushed them away; she was sacrificing her own needs to allow him to focus on the mission, and it would be a disservice to her and all humanity if he allowed his inner worries to cloud his concentration.

He began to work again, shifting his attention to the methane sample he took from the lake, and was content for some time as he analyzed the chemical compounds in the methane.

It wasn't until later, while Ferdinand was running some molecular composition tests in the background, that Nelson's mind again drifted to the situation with his wife. This time he decided to take a moment and deal with his thoughts and feelings squarely so he could really put them to rest.

He had trained himself long ago to focus on command, and to always put the mission first. He wouldn't have gotten through his tour in the Air Force otherwise, or proved himself as a capable and dependable test pilot in NASA's experimental programs. But this was an extreme situation, and all the counseling the government psychologists had done with he and Abigail prior to the mission had barely prepared him for the prospect of such intense separation anxiety. He had left Mother Earth, after all, and his wife as well.

With nothing to do until Ferdinand finished his analysis of the methane samples, Nelson stepped over to the chess board and looked over the

array of small pieces as he mulled things over in his mind.

What was Abigail up to? Was there a hint somewhere in her last couple of chess moves? She had left him hanging after he moved his castle.

That was probably an overreaction. He was reading too much into it. Until he heard from Becker or Abigail, he simply wouldn't know anything for sure, and he had to content himself. But still there lingered an uneasy feeling inside.

He glanced over at the sphere, sitting silently in its transparent box. His memories of the reaction when he touched it filled him with suspicion—was it somehow unlocked by human touch? Was it just making its signal audible and visible to him, or was there more that he might discover if he touched it?

Ferdinand spoke. "I've compiled the results on the methane sample, sir."

"Put it on the screen, Ferd," Nelson replied, still distracted by the sphere. There was no way NASA would allow him to play around with the artifact again, or to experiment with it in his own way. They cared nothing for intuition and didn't trust anything their instruments couldn't predict. Breaking away, he glanced over the report on the wall screen. Skipping over the first section, he read over the description of complex organic compounds Ferdinand had found in the liquid from Titan's surface.

"This is... a lot more than just methane," he said. "Ferdinand, there are amino acids in here!"

"Yes, sir. This sample appears to confirm the hypotheses of Miller-Urey and Horst."

"Unless it's contaminated. This isn't my own biological matter in here, is it?"

"No, sir, not at all. The matter in the sample is distinctly alien."

Nelson reeled and had to sit down. His heart beat wildly. "This is huge. Ferdinand, this is just a few steps away from life off-Earth!"

"I agree, sir. NASA will be very interested to hear about this development."

"Everyone on earth will be interested!" Nelson looked up and found his eyes straying again to the sphere, sitting innocently in its transparent box. Was it a marker? A guidepost to a point of interest that someone or something wanted him to find?

"Sir, a new transmission from Mission Control. Sent by Director

Becker, but the contents of this one appear to be from your wife."

Nelson sighed in relief. "Finally. Put it on, please."

Abigail appeared on the screen where the report had been. "Hey, Roger," she began. Her soft eyes and high cheekbones were captivating, and he was forced to acknowledge how lonely he felt. Even her brief absence had really gotten to him. Nelson's feelings swirled back into him forcefully, taking the place of the work he had been conducting. How was he going to withstand so many years away from her?

"I hope everything is going well with your mission on Titan. I know you have a lot to do, so I'll try to keep this brief and to the point. I want you to know how proud I am of everything you're doing. I'm as excited as everyone else to see what you find there." She paused for several long seconds. "Sorry if I seem unsettled. Things have been a little crazy today. Someone… someone hacked into our home network, Roger. Probably looking for information on the mission. They've been controlling my webcam for... I don't even know how long, or what they got access to. I turned the whole network and all our devices over to the authorities, but they haven't figured out exactly what happened yet. So now the CIA is involved and Secretary Stewart is really pissed off at Becker for allowing any of this __"

She cut off and swallowed hard. "As if I'm not separated from you enough! Now Stewart's threatening to have me banned from Mission Control and off the project for good. I hate that guy! Just because he wears a big suit, he thinks he's in charge of the entire mission and can throw people around like we're pawns in a game." She teared up, and Nelson stared mutely at the screen, unsure what to think about what he was watching. It was not something he had expected NASA to put through to him, and it certainly wasn't helping his own inner struggle.

"I'm sorry. I wasn't going to mention any of this. I know you need to focus, and you're about to make some amazing discoveries, but… it's been a year and a half now, and I know we have most of a decade standing between us, and then this happens. I'm scared, and it feels like I'm writing letters to a dead guy! Best-case scenario, I don't see you for another several years, and it's just—"

She wiped her eyes and looked off-camera. "I should delete this and start over."

The transmission ended.

Nelson sat silently for a moment, considering the situation. Thankfully, Ferdinand didn't interrupt.

He had made the decision to leave his earthly affairs behind, and that decision was necessarily final and binding. If he allowed problems back home to enter into his thinking, he might fail in some aspect of the mission. So far he had experienced good luck and steady progress, but there was no telling what complications he would encounter at Triton or beyond, not to mention all the things that could go wrong en route.

He needed to be a full-time astronaut, a laser-focused precision tool in the arsenal of the most important human organization since time began. Thousands of years of history had come down to this: him, on board the Magellan, performing what promised to be the most thrilling string of discoveries ever witnessed. He could not afford to be compromised in any way, for the sake of the entire human race and the reputations and work of all the people that had sacrificed to send him here.

But his wife was in trouble. That was no small thing.

He shook his head. He had to trust the people on the ground to deal with it. There was nothing he could do to help that situation, nothing at all, and he felt a surge of anger that Becker had sent the transmission at all. He must have understood the effect it would have on Nelson, and it made sense now that the transmission had been delayed until after his return from the Titan mission. Why hadn't he kept a lid on it entirely, or censored it to allow Nelson to keep his focus? Even Abigail had realized at the end how inappropriate it was to communicate this way during the mission, and had tried to recant her message. But Becker had sent it through anyway.

Nelson shook his head again to clear it. He walked over to the secure box and looked down at the sphere. He surrendered himself to its quiet draw this time, allowing his curiosity to push out thoughts and feelings about his wife and consume his mental energy with its mystery.

The artifact almost seemed to hum to him in some subconscious way, filling his mind with an alien tune. It was comforting, almost like a physical companion on board the Magellan, taking the place of Ferdinand and his wife and everyone else he wouldn't see for years to come.

Later, after a cheerless meal carefully designed to replenish whatever calories he had expended on Titan and to prepare his body for another long round of stasis, Nelson sat down to record a message for his wife. He was

thinking clearly and calmly now, and had regained the poise and focus he needed.

"This message is solely for Abigail Nelson, my wife," he said. He waited a moment, looking firmly into the camera, an obvious hint that if Becker or some NASA communications intern was receiving the transmission, now was the time to turn it off and forward it directly to Abigail.

"Hi, honey. I was glad to hear from you. I'm really not a dead guy yet, though. Whatever it feels like. I'm here, I'm awake and alive, and I'm thinking of you."

He cleared his throat, clenching his jaw and using all his willpower to avoid getting emotional in his response. "Try not to worry, honey. NASA will take care of the security situation there, and Ferdinand's taking good care of me, so there's no need to fear for the future. I want you to know that we're really onto something here and I'm getting very excited for what I'll find at Triton. My belief is stronger than ever that these artifacts were put here for us to find, and are guiding us toward something. I have no idea what, but it will be important and worth all that it takes to get there.

"I have to go into stasis now, and this will be my last transmission to you for a couple of years. But if you're thinking of moving your knight to h4, I'm going to have to move my rook to f6. I'm ninety-nine percent sure you're going to do that, so we'll pick it up from there when I wake. Okay? I love you." He nodded, a gentle "keep your chin up" motion. "This is Commander Nelson, over and out."

He sent the transmission, prepared the stasis box, and calmly entered his second long sleep, as the Magellan sailed effortlessly through space toward a distant planet.

12 - Chatter

“Who speaks for Earth? That’s our roundtable question tonight, and you’re invited to weigh in, America. MIT science chair Don Raymond is with us here in the studio, and on the phone we have NASA project director Gerald Becker. Welcome, Mr. Raymond. Welcome, Mr. Becker.”

“Thank you, good to be here.”

“Thanks for having us on, Maya.”

“Let’s get right to it, gentlemen. Last year’s startling discoveries have us all wondering, ‘are we alone?’. With Commander Nelson’s latest dispatch from his position near Saturn—live map and ETA counters online—it seems more and more likely that we’ll soon be connecting with someone or something beyond our current experience.

“Commentators have compared this moment in history to Columbus making contact with the Americas. Others have pointed out that we’re the Native Americans in that scenario, not the European explorers—which could have drastic security implications for our future. I’d like to start out with Mr. Raymond giving us his take whether we’re looking at mankind’s next great leap forward, or staring our doom in the face. Or, perhaps, none of the above: maybe these signals aren’t what they seem at all.”

“Yes, thank you, Maya. Here’s the thing: we can’t possibly know at this point whether there’s anybody out there at all, but what we can do is adopt a communications posture that works for us regardless of the outcome of this mission.”

“And what would that be? Safety in silence?”

“Excuse me, Maya, but I need to respond to Mr. Raymond’s assertion that we don’t know whether someone’s out there. We do know, and we’ve known since the signals were first analyzed. There’s someone there, believe me. Astronomers agree that these signals are not a mistake, they’re not garbled Earth transmissions bouncing back to us, and they’re not natural. They’re artificial.”

“Mr. Becker, with all due respect, astronomers may agree, but the rest of us aren’t so sure. Nobody has been able to make sense of the signals, and until they do, how can we know there’s extraterrestrial intelligence behind them?”

“Because they’re musical! They follow a pattern, a human-recognizable pattern. Stuff like this doesn’t happen in nature, but it does

happen when an intelligent hand is guiding the development of the signal."

"And if they were designed that way, if some E.T. left a song for us to find, what does that tell us about them?"

"Not necessarily a song, Maya. The harmonic nature of the signals are what initially led us to believe they were artificial, but that doesn't mean it's their primary purpose."

"Well, until we know their purpose, Mr. Becker, I say we proceed with caution. And that means not making the first move."

"They've already made the first move, Mr. Raymond. They know we're here. Someone left the equipment in place in our solar system to transmit these signals once we reached a certain stage of technological advancement, and—"

"That's an *assumption*, which is being argued. But until we know, we need to be careful and we need to ensure that our needs as a species are provided for."

"Those don't sound like the words of a scientist, Mr. Raymond. They sound like the pressure I get from the State Department."

"Gentlemen, I'd like to bring this back around to the main question. If we do find ourselves conversing with otherworldly voices in the near future, who should do the talking? Mr. Becker?"

"Well, my contacts in the government would like that honor to reside with the President of the United States, subject to review by a panel of military and bipartisan advisors. But I think that leaves an awful lot of people out in the cold, and I think we need to bring them into the discussion. I've been advocating an active-SETI plan where everyone votes on a message to send, and then NASA is simply tasked with executing the communication of that message."

"Mr. Raymond?"

"Maya, that's just incredibly naïve. We can't even agree on which political party should be in power for more than a few years in a row. If Mr. Becker thinks the country is going to suddenly come together and agree on matters of this kind of significance with a simple vote, he's being unrealistic."

"Excuse me—not the country, Mr. Raymond. The whole world! When I said a POTUS committee would leave people out in the cold, I was talking about all the other countries too. Extraterrestrial contact affects the entire planet, not just the U.S. Don't the people in Europe and Africa get a

say? There are far more people in Asia than in our hemisphere. Who says they don't matter and that we're the ones who should call all the shots? Now you're reminding me of Columbus' era more than I like."

"But Mr. Becker, it was the United States who made the discovery. And it's us mounting the mission to examine the source, at our own cost."

"Yes, but the danger is shared. We might lose our astronaut and a couple billion dollars' worth of gadgetry. But if we bring down the wrath of some extraterrestrial technology on our heads, the people in Asia and South America will suffer for it just as much as we will."

"Amen to that! Hence my argument that active SETI is dangerous and we ought to be careful."

"I never said we shouldn't be careful, and I also don't want to overemphasize the danger. We should absolutely be careful. But we shouldn't be fearful either."

"So, Mr. Becker, how would this voting system work?"

"I'm probably not the man to work out all the details, but I'm imagining an online tool that's easily accessible by even a remote cell-phone user on the fringes of civilization. People could nominate a simple written message and then upvote or downvote, and the message with the most votes at the end of a certain deadline gets transmitted. It's a relatively simple process, and one that's worked out quite well for our political systems over the last hundred years.

"Think of it. Future politics, after we've solved most of our pressing terrestrial concerns, could be interstellar in nature! The issues, instead of dealing with people and resources, will be about how to go about spreading humanity among the stars. That's inspiring, isn't it?"

"Mr. Becker, when has anything like this ever been done on a global scale? What's you're talking about is a political impossibility."

"It's called the internet, Mr. Raymond, and it's been around for nearly a century. We've got the beginnings of this kind of system already, and it's been iterated on since the rise of social media and crowdsourcing. What we're largely still lacking is a way to organize and act on all those conversations, to collate them all and add them up intelligently so that they have aggregate meaning.

"But imagine the social network of the future, a vast political conversation site, where anyone and everyone can log on and—under their true identity—hold forth on their opinions, fears, ideas, and pronouncements.

Hundreds of millions of these data points would be entered every hour. Then the system's algorithm, in a blind and unbiased way, sorts all the conversations as data. It tallies the number of people for and against, it sorts them by demographics, it weights them however you care to look at it, it analyzes trends. Basically all the political analysis that the media is sort of doing right now, but automated.

"Through a system like this, which is probably only a year or two away in terms of technology, we could have the global conversation on this topic and come to a decision on whether to reach out to the stars, what to say, where to look, and how to respond to this new age of discovery."

"That's… that's quite a proposal, Mr. Becker. But there's a dark side to democracy. It's the tragedy of the commons and mob rule. Sometimes the whim of the crowd brings about undesirable results, which in this case could be devastating to us all."

"Undesirable to whom, Mr. Raymond? Undesirable to you? To the academic elite? To the political regimes in power? Frankly, I'm surprised to hear such a repudiation of real democracy from a man in your position."

"But Mr. Becker, if I may—wouldn't you agree that, in your words, 'the wrath of extraterrestrial technology' could be pretty undesirable?"

"Of course it could. But I trust the human race enough to believe that together we can come up with the best ideas. It's *out there*, built on a myriad of human experiences, that truth is found—not in some ivory hall where innovation and free speech is chilled. Maybe I'm just an optimist, but if we can't trust mankind as a whole to move forward in the right direction, then what are any of us doing here? What are we hoping to accomplish if we can't have faith in our species, in our own selves?"

"Maya, I find all of this foolish and frankly rather offensive. If Mr. Becker is so blindly idealistic as to overlook the bulk of history and ignore the misery and injustice that mankind has caused for itself and the environment, well, so be it. But until we know what we're up against, I think it's beyond imprudent to start throwing immature, crowd-sourced messages out into the cosmos in a kind of ill-advised social experiment. I mean, consider the implications if these supposed extraterrestrials are as dangerous as some of our nation's enemies are? It could mean the end of mankind, for all we know."

"Mr. Raymond, you seem to be projecting your own fears and biases on this extraterrestrial entity that's out there. It's almost a Cold War

mentality. Why would they be hostile, or paranoid, or vengeful just because some of our earthly regimes have been? There's nothing in the signals we've heard nor in Commander Nelson's discoveries so far that should lead us to believe we're in danger.

"I'm advising caution as much as anybody—it's my astronaut out there, remember—but taking precautions doesn't mean acting out of fear. Fear stunts growth and progress. With a little courage, mankind can go a long way."

"And that, gentlemen, is all we have time for today, I'm afraid. Viewers can join in the conversation online to keep the debate going until next time, when we'll hear from a prominent atheist and a Christian commentator whose contrasting viewpoints might just surprise you. Mr. Becker, Mr. Raymond, I want to thank you both for being with us this evening."

"Thanks, Maya."

"Goodbye."

13 – Transmissions at Triton

Thirty-two months later at Triton, Neptune's largest moon, the Magellan automatically began to slow its approach.

Inside the stasis box, Nelson was dreaming. He was flying over an ocean of blue water. Over his head, millions of bright stars flew by faster and faster until light filled his view.

Then there was only a chess board. The black king slid across the squares of its own accord, moving into check. That was wrong, it was nonsense. It couldn't be done. But there it remained, defiant and challenging.

Then there was a memory, a dream of something that had actually happened prior to Nelson's departure. He was lying on the grass, looking up at the night sky, and Abigail was beside him.

“What's it all about, Roger?” she murmured. “Why are you really going up there?”

He smiled. “Exploration. To boldly go. The discovery of what we could only dream of, half a century ago.”

Abigail smiled back, but shook her head from side to side so that her hair rustled in the grass. “No. That's not it.”

Nelson looked at her quizzically. “No? Then what is?”

She stared upward for another moment at the stars. Then her lips parted to let words flow from whatever far-off place it was that her mind and eyes had reached. “You're fighting for significance. You're a tiny speck in that enormous universe up there, and you're looking for man's place in it. You want meaning. Just like everybody else.”

More water rushed by, and stars, so many stars that Nelson's eyes were filled with them. And then:

“Follow my voice, Roger.”

He awoke as the stasis box slid open, and he slowly climbed out, thinking of Abigail. On the screen he could see a forward view of Neptune looming large, and its moon a small circle against the larger mass.

“Good morning, sir,” Ferdinand said.

The shivering didn't stop for fifteen minutes this time. It wasn't that his body was particularly cold or incapable of warming itself; Ferdinand’s constant attention had ensured a comfortable temperature both in and outside the stasis box. It was a physical reaction as Nelson's core began generating

heat again at a higher level than he had needed to for a few years. He sat and rubbed at his hair with a white towel, blinking and breathing deeply.

“Go ahead, Ferdinand.”

“The advance probe at Triton failed on arrival, sir. No survey data has been collected, and we'll have to perform orbital surveys ourselves when we get within range.”

Nelson sighed. That was a serious setback. “What happened to the probe?”

“A software error of some kind. Mission Control has not forwarded the diagnostics from the probe.”

“How much time will it take to locate the source of the signal ourselves?”

“Between two and eight hours, sir. By orbiting the moon every two hours and allowing for a maximum of four complete orbits, we'll have effectively covered every region of Triton with our sensors.”

“And how does that affect our window to leave for Eris once we're in orbit around Triton?”

“Worst-case scenario, we'll miss the window. If we can locate the source sooner than that, you'll have between ten minutes and one hour on Triton to recover the transmitter. Either way, we can't afford any major delays on the surface, or it will complicate the rest of our journey immensely.”

Nelson slowly nodded. This was exactly why he’d tried so hard to make it off of Titan sooner—he knew from hard experience that once setbacks started stacking up in a mission, it got harder and harder to overcome them and get ahead again. At some point, it would become impossible, and the mission would be compromised. It was up to him, his own ingenuity and pluck, to find a way to get them back on schedule.

“I've dealt with tight missions before. We’ll see this through.” He stood up to retrieve a set of dry scrubs from the wall locker. “How's it going with the Chinese mission?”

“Nothing official, sir,” Ferdinand replied. “It is believed they may have arrived at Triton sometime in the last seven days, but there have been no public announcements on their mission status from either the CNSA or NASA. I have not detected any other spacecraft orbiting Triton.”

“Okay. Any new messages from my wife?”

“No, sir.”

“Nothing?” Nelson frowned as he pulled the scrubs on.

“There are over two hundred dispatches awaiting your attention, but none of them appear to be from your wife. It's possible that I could have made a mistake due to mislabeling.”

Nelson shook his head. “That's real sweet of you, Ferdinand. But you can dial down the patronizing and give it to me straight from now on, okay? If my wife hasn't responded, then that is what it is and I can deal with it.”

“Yes, sir. There is something else I should bring to your attention.”

“What is it?”

“I detected anomalies in the transmission of the sphere's signal, and NASA confirmed it on their end. Momentary variations from the regular tonal pulse the object has been emitting since it began.”

“What about the other two signals? Did the one from Triton change at all?”

“No, the anomalies were only found in the signal coming from the object on board, sir. And from NASA's analysis, it appears that at the precise moment of the anomalies, there was a significant rise in your brain activity. This rise was similar to measurements found while dreaming in normal sleep, but that isn't thought to be possible during stasis, since that level of brain activity is entirely suppressed.”

Nelson rubbed his cheek and pondered this.

“NASA instructed me to ask you if you remember dreaming at all during your stasis sleep, sir. Were you dreaming?”

“Yes. I think so. Just... images. I can't remember anything specific.”

“I'll notify NASA of your response. Thank you, sir.”

Later, with gloved hands, Nelson opened the box containing Titan's sphere and gently lifted the artifact out. Holding it in one hand, he touched it deliberately with one finger of his other gloved hand. Nothing happened.

He set the ball on the table surface of his work area and stared at it. Was it humming? He could swear there was a kind of sound echoing just beyond his range of hearing. As he stared harder, the humming seemed to merge into the noise of distant waves crashing against an invisible shore. The sound pulled him closer, and he began to imagine that if he stared harder and listened more closely, the sound would resolve itself into something more concrete and recognizable.

“Sir? Is everything all right?”

Nelson started at the sound of Ferdinand's voice and pulled back from the artifact, embarrassed that he had zoned out. Had his heart beat slowed, or had some other bio-metric indicator tipped Ferdinand off to the strange experience? “Fine, Ferdinand. Just trying to figure this thing out.”

He put the sphere back into its container, not quite willing to repeat his bare-hand experiment without authorization. “Guess I'd better tear into those transmissions from NASA, huh?”

“We'll be in position to begin the orbital signal scan shortly, sir. It will be fully automated according to the plan I described, so you will be free to process communications for the next hour or two.”

Nelson went to the cockpit to bring up the comms console. There were two and a half years of log files, status updates, transmissions about the mission parameters, and the occasional note of encouragement from NASA, from adoring schoolchildren, and from government entities all over Earth. They were mostly short text files, but some had multimedia transmissions attached.

Nelson read over a summary of the ecstatic social reaction to his Titan discovery, and was thrilled to hear that general interest in the American space program was surging to an all-time high, not to mention the elevated level of international scientific discourse surrounding the possibilities that life off-Earth had stimulated. Congress had presented a joint resolution to dramatically increase NASA's funding, and the president was expected to sign it shortly.

“Hah! How about that, Ferdinand? More budget for our administrative friends. Maybe they'll send me a fruit basket.”

Ferdinand's reply was immediate. “Unlikely, sir. The cost and logistics of resupply at this range are prohibitive.”

Nelson grinned, but said nothing. It was the first time his sarcasm had entirely escaped the AI's capacity for human conversation. Take that, Abby, he thought.

The reminder of his wife's silent reach got him looking through the messages again, hoping something from her might be appended to a NASA communique, or that at least Becker would mention a forthcoming wake-up call from her.

He scanned past a series of warnings penned by Secretary Stewart. They were wordy and couched in ominous, vaguely threatening terms. They hinted that the Triton probe could have been hacked or sabotaged. As if

Nelson could do anything about it now.

Becker had sent a video not long after the signal anomalies were detected. Nelson opened it to view.

“Commander Nelson, this is to inform you that at eighteen hundred hours today, just after the Magellan reached a distance of twenty-four astronomical units from Earth, we recorded an anomaly in the Titan object's signal. For thirty-four minutes the signal scrambled and seemed to transmit intermittently in what we think might be a kind of binary code, a series of clicks. These variations only lasted a few seconds each, and after the thirty-four minute mark all anomalies ceased. The signal has remained normal and steady since.

“We are still looking into this event and attempting to decode the binary clicks, if there is any meaning to be found in them. Whether this has anything to do with you touching the artifact against protocol, I don't know, but Stewart is livid. When you awaken at Triton, please do not perform any further experiments off the books. We need to manage this process very carefully from here on. Thank you.”

Nelson read several sequential messages that came after the video. Apparently, all attempts to decode the binary clicking had broken down, and NASA eventually decided they had jumped to conclusions prematurely and that there was no binary message, but simple static. A final message from Becker second-guessed that decision, however, and reminded Nelson to report any unusual activity he noticed in hopes that he could help figure out the mystery.

Typical bureaucratic overthink. Nelson felt himself getting impatient. “Ferdinand, any progress on locking down that signal?”

“The search is six percent complete, sir.”

“Well, keep it going. We need to get lucky and nail it early so I can get down there.”

Nelson got up and returned to the rear area. He approached the sphere, nestled in its container, and stared down at the maddening object. He was not wearing gloves, and his fingers itched to close over the smooth surface of the artifact and wrest its secrets away. He opened the container lid.

“Sir, can I inquire what you plan to do with the object?”

“Certainly, you may,” Nelson replied. He put his hand into the box, hovering near the sphere.

“This isn't part of our protocol, Commander,” Ferdinand gently

reminded.

“No, it's not, Ferdinand. But I am on a mission of discovery, and so far I'm the only person who's discovered anything at all. So I think I'm just going to continue following my gut.”

“Your gut, sir?”

“That's what I said. Are you recording?”

“I record everything, sir.”

“I hope not *everything*. But make sure you get this.” He touched the sphere.

Instantly, the object from Titan lit up as before, glowing with an internal energy response. An audible tone emanated from the container and grew in volume and intensity the longer Nelson held his hand on the object.

Ocean waves danced before Nelson's eyes, blocking out his view of the Magellan's interior. Then there were stars, and the sound of waves crashing as before. An image of Abigail hovered just behind his eyes, not quite in full view but very present. From his perspective, he seemed to be flying over a vast sheet of water. Then a chess board, the one from his dream, dominated the vision, but it soon dissolved into a field of stars, among which shone three points of light far brighter than the rest.

“Follow.”

The word didn't come from Ferdinand. It was in Abigail's voice, but somehow Nelson didn't think it was actually his wife speaking. It would make no sense coming from her. It was more like the orb itself was speaking to him.

He fell back, startled and breathing heavily.

“Did you get that, Ferd?”

“Yes. Can I inquire what caused the physical reaction you just displayed, sir?”

“I saw... images. Like in my dream. There was water. And stars.” He slid the container shut with a snap. “It's some kind of vision, Ferdinand. A message. These dreams aren't coming from me. It's the sphere talking to me.”

“I see.” Ferdinand paused as Nelson stood, staring at the secure container holding the artifact. “A transmission from Director Becker has just arrived, sir.”

Nelson sat down, blinking rapidly. “Play it.” He knew it would take several hours for Becker to see what Nelson had just done and respond, but the timing of the incoming transmission was still a bit alarming.

Becker came on the screen looking sober. “Commander Nelson, we've just received word from our intelligence sources that there's been an accident involving the Chinese mission. They never made it to Triton. We're not sure what happened and the Chinese government is still keeping it all under wraps, but apparently a mechanical failure killed all three crew members en route to Neptune.

“Your mandate, of course, is to continue the mission as planned and recover the second transmitter from Triton. Please use caution, however, especially outside of the Magellan. We have detected—and stopped—several attempts to gain access to mission firmware. Law enforcement agencies are following the leads we gave them, but for now all we can do is exercise caution. We'll keep you posted on the Chinese news updates, and I've already reached out to Abigail to let her know you're safe and on target. Good luck.”

Nelson shook his head. The mission was certainly on target. But complications seemed to be piling up. He would need to be sharp to stay on top of them all.

A few hours later, the signal's source was locked, and the Magellan maneuvered into a steady orbit that could cross directly over it every two hours. After a quick prep checklist, Nelson donned his suit and got behind the controls of the lander. Through the cockpit windows, he could see the reflective surface of Triton, mostly in shadow as it revolved at a canted angle around its host planet.

Here we go.

14 – On Triton’s Surface

“Search time on the moon's surface is limited, sir,” Ferdinand said as Nelson detached the X-57 from the Magellan and began the descent toward Triton. “We found the location in time to give you about thirty minutes on the ground. If you exceed that, we will be trailing Eris across the solar system and it will use up far more fuel than our ideal mission scenario.”

“Acknowledged.”

Nelson piloted the lander toward the pale, icy moon, which grew larger and larger in his view until it filled the whole cockpit, dwarfing the far larger but more distant blue planet it orbited.

It weighed on him that he was now almost three billion miles from Earth—three times as far away as the Titan portion of the mission had gotten him. He was so far beyond the reach of men that it would take several years for a subsequent mission to reach this point, and that was just direct travel time. Realistically, no one from Earth could arrive here for multiple decades, assuming a compelling case could be made for funding an accelerated schedule.

Some of the mission parameters fluttered through his mind, contingencies in which he could wait in stasis for a number of years until the Magellan could be recovered and returned to Earth. But they were mostly relevant for the first leg of the journey. The likelihood of the stasis box remaining stable long enough to be recovered from Neptune's vicinity, especially after a mission-ending mechanical failure aboard the Magellan, was low. And beyond this point, between Triton and Eris, there was little hope that the ship would ever be brought back to Earth. If the Magellan suffered a catastrophic failure now, it would join the Voyagers and Pioneers as silent drifters, lifeless pieces of machinery that would sail for a thousand years toward distant stars.

“Sir, this is Neil—just a reminder that Triton's gravity is about eight percent of Earth's, and there's only a trace atmosphere. Escape velocity is super low, and we'll have no trouble landing and taking off again using minimal energy!”

Nelson smiled. At least he had these talking computers to keep him from brooding. “Thanks, Neil. That's good news.” He’d never felt so closely monitored—or so alone. Disembodied electronic assistants didn’t even approach the warmth of human contact, no matter how psychologically adept

their programming was. But Nelson stopped himself before he could examine his feeling of empty loneliness, and the thoughts of his wife that his dreams had left swirling in his heart. He was a man with a job to do, and there would be time later for rumination.

As Neil predicted, the descent into Triton's atmosphere began much more smoothly than on Titan, which had one of the thicker atmospheres in the solar system. Triton's surface, by contrast, was icy and unclouded. The viewscreens showed a wide expanse of light gray spreading out on all sides. Supposedly there were cryovolcanoes and nitrogen geysers to watch out for, but Nelson saw no sign of any near the landing area.

"The terrain in this region is topographically varied," Neil advised. "Between the visible craters and all the hills and ridges, you may have a challenge ahead of you to reach the site."

"Gravity's low, though," Nelson replied, "so I can probably get around more easily than on earth."

"That's true! But still, as we come in on the target zone, do your best to get the lander as close as possible to the triangulated signal. I'll narrow the range parameters in real-time for you."

"Okay, Neil. Here we go."

The thin atmosphere made the lander come down a little faster than Nelson had calculated, but he found that the craft responded easily to his touch on the controls and he was able to slow it in as short a time as he wanted without feeling much pressure at all on his body. As the jets automatically responded to his ground proximity, he focused on the triangulation data Neil was feeding him and edged the lander nearer to Triton's north pole. Finally he touched down on a flat, unobstructed patch of icy rock that lay between several craters and low mountains.

As soon as he was down and the cockpit lights indicated a stable at-rest condition, he quickly prepared to exit the lander. "Okay, gotta go, Neil. Minutes count this time. Keep updating me with any help you can give in finding this thing."

"Will do, sir! But be advised: now that we're down on the surface, my sensors don't have as much reach. You may need to rely on your proximity tracker."

Nelson made sure the locator device was functioning correctly and then stepped into the small airlock at the rear of the cockpit. A few seconds later he was out onto the surface of Neptune's moon, looking around at the

shiny, slightly rose-colored gray surface.

Though he was hyper-conscious of the time limit on this part of the mission, he took a moment to gaze around in astonishment at the dramatic terrain near his landing site. The view from the surface of this moon was even more breathtaking than on the way down: high ridges rose above him on all sides, the walls of sizable craters and rocky mountain ranges. They cast long shadows that were pitch black, reaching out from every outcropping and mound. On the descent he had seen even deeper valleys than the one he was in, however. He was far from the bottom of this region on Triton's surface.

"Are you getting all this, Abigail?" he muttered instinctively, turning his head from side to side so the helmet cam would capture the full vista. For a moment, he felt as if his wife was with him somehow, in spirit if not in body, and he was sharing this moment of discovery with her. "It's incredible."

He became suddenly self-conscious as he remembered that five or six billion other people would also be listening to every word he uttered, and that was nothing compared to the ribbing he'd get from his NASA colleagues if he said something dumb.

Holding the locator device in one hand, he moved away from the lander, tearing his gaze away from the alien horizon long enough to keep an eye on the directional indicator. The signal was strong, coming from a point not more than half a kilometer ahead. With less atmosphere to get in the way, it had been much easier to zero in from above, and Neil's last-minute updates had indeed helped.

"We're nearly on top of it, Neil. Good work. This will be a short hike."

"Fantastic, sir! And there's no weather on Triton to interrupt the expedition."

"Nope. Just a ticking time window." Nelson hurried onward, experimenting with his stride to see how much he could get away with. He settled into an easy jog that bounced him gently along without putting him into the air for more than a fraction of a second. He didn't want to tumble to the ground with his helmet cam running—he'd never live that one down. Also, there was the small issue of rupturing his suit on a jagged rock in negative four hundred degree, practically airless conditions.

After a few minutes of foot travel, he saw that he was nearing the rim of one of the craters he'd seen on the way down. It wasn't the deepest in the

area, but it was a significant obstacle.

"Uh, oh, Neil. Indicator's still pointing straight ahead. That puts the signal…"

He approached the edge of a ravine, one of many that ran down into the surface crater, making its rim jagged and toothed like a gaping mouth.

"… Right in the middle of this crater's floor. I guess we should have steered the lander right into it, Neil."

"Perhaps it's farther on, sir. You may want to circle around the rim until you get a better fix on the signal."

"Why do you say that, Neil?"

"Based on data NASA has postulated about expected transmitter locations, sir, the bottom of an impact crater seems an unlikely place for a beacon that's been here for a long time. Unless these transmitters can survive a meteor impact, that is."

Nelson frowned. "I don't think we're more than a hundred meters away from it, which would put it right down in the basement of this thing. Maybe it hasn't been there long," Nelson replied, looking for a way down the steep cliff at his feet. "It probably wasn't placed here within the last century, or we would have detected signs of its arrival. A hundred years is nothing, though. Triton's surface is supposed to be pretty fresh, but we're still talking millions of years of meteors and erosion as this landscape has melted and frozen. The beacon could easily have been placed after this crater was made, but before we started watching our little corner of space."

"But the walls of a deep crater would inhibit the radio signal and increase the risk of the beacon becoming buried," Neil argued back, still managing to sound chipper and supportive in her challenge. "NASA data suggests a mountain top or flat valley floor is a more likely site!"

"Well, I'm guessing whoever put them here had a plan to deal with that. There's a lot NASA doesn't have a handle on yet. For example, these radio signals are far stronger than a tiny little ball should be capable of generating, in a crater or out of it." Nelson softly kicked at a loose rock on the edge of the cliff, sliding it toward the edge. It slowly tipped over and began a smooth fall, then hit the slope and tumbled down the ravine before becoming lodged in a crevice. "I think I have some climbing to do, Neil."

"It's your judgment call, sir. As always!"

Nelson stared down at the valley floor in front of him. The ravine marked the safest way down, but it meant navigating a nearly fifty-foot

incline that was near vertical in some places. As he turned his locator this way and that, trying to get a better angle and zero in on the location of the transmitter, it seemed to point straight at the foot of the cliff some eighty meters distant. The ravine would be a tricky route, filled with large boulders that had calved off and partially filled it. There was a steeper cliff face nearby that would be more direct, but a dangerous and strenuous climb.

"We have twenty-six minutes remaining, sir. You should return to the lander for additional gear. I urge you to at least take a length of cord and your telescoping geo tool."

"Yeah." Nelson bounced lightly on his feet, feeling the gentle impact of his oversize boots on the icy crust. "Thing is, I could probably just jump down there in this low gravity, and land it without all the climbing. You think?"

"That is not advisable, sir. While the low gravity would prevent you from injuring your body on impact, the temperature difference between the internals of your suit and Triton's surface temperature would mean that even a minor rupture in your suit could result in combustion. It's a risk I urge you not to take!"

Nelson considered that for another moment. "You don't want to clean up my frozen, exploded remains? Come on, Neil."

"No, sir. I do not." Again the sarcasm had slipped past the AI his wife's team had built. Strike two, Abby, he thought.

Returning to the lander, gearing up, and making the climb with a rope tethering him to the top would make it a half-hour-long process. There wasn't time. "I'm going to climb it without gear, Neil. I'll take it carefully."

"Acknowledged, sir. We now have twenty-five minutes remaining to make our launch window."

"All right, keep me posted every few minutes." Nelson walked to the part of the ravine that offered the easiest entry. With a transport box and a bag of small tools flapping gently outside his suit, he turned and clambered down the rocky defile.

Getting over the lip of the crater was surprisingly easy, thanks to the ravine that cut a wedge-shaped crevice through the top of the cliff. Once on the slope, however, Nelson constantly had to stop and check his route so he didn't get into trouble on one of the steeper parts with no hand-holds.

He tested his weight and found that he could hang on the side of the cliff easily without using his feet, but he didn't want to use up all his arm

strength on the way down. He still had an ascent to make with the artifact, and time would be even more critical on the way up.

Suddenly his gloved hand slipped on the hold he had moved to, and the added weight made his other hand and one boot slip too. For a moment he caught himself with his other foot, but then that rocky outcropping crumbled and he slid several yards down the steep slope, feet and arms bouncing off the icy crust as he scrabbled for purchase.

He slid to a stop before going too far, and hugged the rock face for a moment until he was sure his suit was undamaged. Then he continued.

“I'm okay, Neil. Continuing down into the crater. How we doing on time?”

“Eighteen minutes remaining, sir. Your suit pressure is stable, but your heart rate is elevated.”

“Yeah. I had a scare, but I came out all right.” The slide actually gave him a bit more confidence, now that he knew how it felt to bounce down the cliff and stop himself. When he came to a particularly steep portion of the incline he identified a sizable rock ten feet below him and let go, letting himself fall gently to land on the rock. He almost overbalanced and fell the rest of the way to the crater floor, but he put out a foot and steadied himself at the last second. A few more cautious slides got him to the bottom without further trouble.

“Okay, I'm down. I think the sphere is going to be very close. Right over... this way.”

The locator device pointed the way to a small mound about ten meters from the foot of the slope.

“Yeah, this is it, Neil. I’m nearly on it!”

He jogged a few more steps along the foot of the cliff and then stopped. He could see the second beacon poking up from the top of the mound before he even closed on it.

“I've found it, Neil! It's here!”

“Excellent work, sir! I knew you’d do it.”

Setting the transport container next to the sphere, he pried the alien object out of the icy crust with a tool from his bag, and stopped to examine it. It looked exactly like the one from Titan, perhaps a little smaller. Mottled iridescence gleamed on its spherical surface as he held it up to the daylight.

He stowed it in the container and then chipped a small chunk of ice from the mound where it had rested. He put that and a couple of rock

fragments in the container next to the sphere, closed it tight, and looped the container's tether cable over his shoulder. Then he turned to go. “Did you get good imagery of the site through my helmet cameras?” he asked Neil.

“Yes, sir. You'll need to hurry back up here; time to departure is twelve minutes!”

Nelson jogged back toward the ravine, looking up at the cliff wall as he went. The curvature of the slope blocked the last part of the rim from view, but it seemed to be a lot higher than it had seemed from up top.

He came to the mouth of the ravine and began scrambling up the boulders. After a couple of minutes he got to the steep portion that he had slid down previously, and stopped to scan for an easier way.

There wasn’t one.

Looking around at the rugged stone face he was attempting to climb, he realized he wasn't sure he could actually make it in twelve minutes. The ascent wasn’t nearly as strenuous as it looked; Nelson’s Earth-strengthened muscles had plenty of energy left in them. But the way was steep and icy and he couldn't jump nearly as high as he had slid down.

The minutes were burning. He swung the sphere's container to his back, hanging it from his shoulder on its tether so that it wouldn't get in the way. The he began to climb the nearly vertical stone face in front of him, hugging the rocks and inserting his gloved fingers into any crannies he could find. The huge toes of his boots made it very difficult to get good footholds.

“They didn’t have rock climbers in mind when they engineered these boots, did they?” he muttered. “If I had climber’s shoes on right now, or even a pair of good sneakers, I’d be up there already. And why didn’t we think to bring along a jetpack?”

“Sir, nine minutes left,” Neil replied, still in a perky and helpful tone. But the fact that the AI had ignored his grating attempt at humor told Nelson how close he was coming to mission failure.

His foot slipped and he found himself hanging by both hands, bouncing gently against the rocks.

“I can't get traction on this ice, Neil! Not in this low gravity.” Nelson took a few seconds to look for a better route. There were a pair of rocks nestled together overhead that would make a good platform to push upward from, but there were no good handholds to get up to them. Going around would take extra minutes, and he could hardly back down and start over.

Nelson's mind raced as he tried to come up with a way out of his

predicament. There was a cord sitting in the lander's cargo compartment, he knew. Coiled neatly next to a few other items of gear he had opted to leave behind. Pity that Neil was just a voice in his head with no way to bring it to him.

But there *was* a length of cord on him, he suddenly remembered—the transport container's tether. It would probably stretch to three or four feet, just enough to get over the two rocks.

Hanging on with a hand and both feet, Nelson reached back with his free hand and pulled the container up to where he could grab it. Then he hurled it upward, aiming for the rocks. It went low and bounced back, hitting him in the head and then dangling behind him.

He tried again, and this time got it up over the top of the rocks so that it settled on the outcropping just above them. He carefully lowered the tether cable through the space between the two rocks, forming a makeshift anchor. Then he began to pull himself up, using the tether as a climbing rope. It was a hundred times easier than rock-climbing on Earth, and Nelson felt a surge of relief and elation at having solved his problem.

“And this right here, Neil, is why they sent an astronaut on this mission. Think a robot could have managed this climb?”

“No, sir!”

“Right you are. Sometimes it takes a man—”

The whole thing broke loose and he fell backward, plummeting several yards to land on his back at the foot of the short cliff section.

“Sir, are you all right? Have you fallen?”

Nelson got to his feet. The fall hadn't even knocked the wind out of him, but he was keenly aware of the loss of time as well as how foolish he’d just made himself look. He could see the container resting on the rocks above, its tether dangling down and swaying slowly.

“I'm fine. Just need to get back up there!” He threw himself at the cliff, leaping as high as he could and clawing at the rock face. The time for caution was over, and he needed to put some serious hurry on.

“Commander Nelson, your suit pressure is still in the stable zone but there appears to be a very slight oxygen leak, probably caused by your fall. The self-healing fabric of your outer suit layer should close it soon.”

Nelson ignored Neil and continued up the rock face like a wild man, abandoning his previous route and moving left up a section of wall that was initially steeper but had easier holds farther up.

Two minutes later he had gained the same height as before, but now had to move laterally to retrieve the container with the sphere and his ice sample in it. He was grateful to see that it was still resting where he had tossed it.

“Our window closes in six minutes, sir.”

“I'm coming, I'm coming!” Nelson stretched his body out to the limits of its reach, feeling everywhere for the tiniest finger holds that would get him where he needed to go.

Planting a foot on a small outcropping, he was able to lunge over to the rocks holding his container and scoop it up. Then, looking up, he saw a number of good handholds, but now he only had one free hand. The other was tightly clutching the container.

“Five minutes!”

He inched his way up as quickly as he could without risking another fall or dropping the container. He was nearing the lip of the crater now, and knew he had time as long as he didn't screw up again. A few more footholds and one close call with a slick patch got him within a few meters of the cliff top.

Finally his arms came up over the edge, and he deposited the container on top of the crater's rim.

“Three minutes, sir. You need to get to the lander quickly so we can lift off in time!”

“Turn all systems on, Neil. Have that thing ready to blast off the moment I come aboard.”

“Yes, sir.”

Nelson swung a leg up and heaved himself over the rim, rolling free of the ragged crust near the edge. Suddenly a warning tone sounded in his ear.

“Sir, your suit pressure is dropping rapidly! Can you locate the leak and patch it?”

The crater’s teeth had gotten him after all. Nelson stood up and quickly checked himself. “I can't see it. Where is it?”

“I can’t tell, sir, but if it rips you'll be in grave danger. You need to quickly patch it.”

Nelson grabbed the transport container and started half running, half bounding like a mad jackrabbit toward the lander. “There's no time. We have to get out of here or we'll never make it to Eris. Charge the VTOLs!”

“They are charged, sir. I highly recommend you stop and patch that leak. Rapid movement increases the risk of a catastrophic suit tear, and if it widens—”

“I know! I just need to make it into the lander. Keep that hatch open!”

The X-57 was mere yards away now, and he could see the open airlock waiting for him.

Nelson bounced the last several feet with only the toes of his boots touching the ground, and threw himself head first inside the landing craft and slapped at the button to close the hatch.

“Lift off immediately, Neil! I’m on board.”

“Lifting, off, sir.”

Seconds later the interior of the airlock pressurized, and the warning tone in Nelson's helmet eased off. He opened the inner door and scrambled across the floor of the lander, grabbing at the pilot chair as the ground fell away outside the cockpit. He felt the g-forces pulling at him more strongly than before, but it still wasn’t anything he couldn’t handle.

“Full power on those VTOLs, Neil. Don't worry about me!” He stood up, gripping the seat back for support, then collapsed into the chair and strapped in.

With a sigh of relief, he watched Triton gradually shrinking into view out the port. Its shiny gray surface was placid and steady, betraying no evidence of how close he’d come to a worst-case scenario.

Still gripping the transport container in his gloved fist, broken tether cable and all, he breathed out a long, shuddering sigh.

15 – Transmission Anomalies

The lander intercepted the Magellan with a few minutes to spare. Nelson didn't remove his helmet until after docking securely with the larger ship.

“Welcome back, sir,” Ferdinand's voice echoed as he left the pilot's chair and moved toward the lab area. “It appears that you were successful.”

“Yes. Get us on our trajectory right away, Ferdinand. I do not want to be caught chasing Eris' tail out of the solar system. We don't have fuel or time for that.”

“We are on our way, sir.”

Nelson stowed the ice sample but held on to the sphere in its container. He positioned himself in front of a camera and began a video transmission to NASA.

“I found the second transmitter,” he said, holding up the sphere in front of the camera. “It's a little smaller and grayer in color than the last, now that I’ve got it under the lights in my space lab here. Otherwise it appears much the same as the one from Titan. I barely made it back in time to get to Eris, but it looks like we're still on schedule. In my next transmission you can expect a full analysis of this object as well as an ice sample I collected.”

He ended the transmission and took a moment to catch his breath.

“Okay, Ferd. Are we clear of Triton?”

“The Magellan has moved into position to escape Neptune’s gravitational well, and we are now accelerating to intercept Eris, sir.”

“Great. Good. Whew! That was a closer shave than I meant to have on this trip. But we’re gonna make it. We’re gonna make it, Ferd.”

“Yes, sir. We are.”

Nelson removed his EVA suit and changed into a pair of scrubs. Then he got to work, and drank a full liter of water while imaging the new artifact and comparing it to the sphere from Titan.

He carefully prepared the ice sample for chemical analysis, dialing the glovebox to Triton-like temperature and pressure conditions. Using the gloves, he carefully inserted a test probe into the chunk of ice. “Ferdinand, see what that's made of, will you?”

“Right away, sir.”

Seconds later, the AI spoke again. “You have a new transmission from Abigail.”

“Great! Play it,” Nelson replied, eagerly turning to the nearest screen.

“Hey there,” Abigail said the moment her image came on-screen. The sight of her thrilled Nelson. It had only been one day for him, but he felt the weight of the years piled up behind the transmission, and almost wanted to whoop out loud. The strain of those years was written on Abby's face, however, which dampened his excitement.

“Becker told me you'd be coming out of stasis today, and my guess is by the time you get this you'll have been awake for some time. Becker's letting me hang out here for your reply, despite Stewart's objections. I guess he feels bad for the 'astronaut widow'.”

She brushed her bangs out of her eyes, and Nelson noticed that she had a completely different look to her hair. He made a mental note to compliment her on it in his reply.

“So, it's been fifty months,” she went on. “That's just over four years. A lot's been going on. My sister's been living with me for the last six months or so, and it’s been nice to have some company.”

She was speaking calmly, almost droning on, as if disinterested in her own words. And she had a distracted look in her dark eyes. Nelson frowned, staring intently at the monitor.

“I thought I was up for a promotion at work, but...” At this point, Abigail looked over her shoulder and cleared her throat. “It didn't happen. Quite the opposite, in fact.”

She swallowed, waited a moment, and then continued. “I don't know, I can't even seem to get a speaking gig at the local A.I. symposium anymore. But everyone wants an interview with the Astronaut's Wife. That's all anyone is ever interested in these days.” She rolled her eyes. “They're not really interviews anymore. I guess if I wanted a weekly opportunity to sob in front of a camera about the heartache and the loneliness, I'd have it. But I don't want that.”

She gazed into the camera as if trying to imagine Nelson in front of her. “I mean, the heartache is real. I'm not saying I don't feel it. I just don't think the world needs to hear about it all the time.”

Nelson felt a flood of suppressed emotions welling up in him, and now that he was seeing his wife face to face—almost—it was nearly impossible to keep them in check. Clearly, four years of separation had been a lot harder on her than he could understand from his position. And it was far from over.

Abby shook her head as if to clear it, and began a new line of one-sided conversation. “This ball you found, Roger... it's amazing. All I know is what they've publicly released, but everyone I know is fascinated by it. You should hear some of the theories that are gaining traction. My cousin thinks it’s all a hoax to enrich the aerospace industry, and my sister found an article suggesting that you’re actually an alien yourself, planted here by the Russians. We had a good laugh over it.”

Her serene face briefly wrinkled into a grin, but then moments later creased in worry. “I'm... scared of it, Roger. I keep having these dreams of you floating off into space. And worse. Becker keeps telling me you're okay, that Ferdinand's reports are constant and vital signs are good. But they're not giving me full access to the mission anymore. And after what happened to the Chinese mission, I'm just afraid. I'm afraid you're going to die out there, far from me.”

She sighed and brushed away a tear. “Sorry. I shouldn't talk like this, I promised myself that this time I'd put on a good face. I know you only have a short time between stints in the stasis box to get your work done. But I miss you, Roger. A lot.”

She reached up to end the recording, then added one more thing. “Um... queen's side castle.”

The transmission ended, and all the words she *hadn't* said echoed loudly in the silence of Nelson's mind. All she had talked about was the current state of things, the mission and her fears for it.

Before leaving he’d offered Abby whatever emotional buffers she needed to deal with their unprecedented situation. It was only fair—his mission demanded focus on NASA priorities while he was awake and he owed her nothing while he was asleep. He'd been proud and pleased when she rejected that offer, vowing to keep a fire burning brightly in her heart despite having no real guarantee that he'd return in the end. Now he was surprised at how much her emotional distance stung.

Theirs was the ultimate long-distance relationship, but was it really so unprecedented? Sailors and explorers in the old days left their families for years at a time with only a yearly letter or two to maintain the connection. As often as not, the family would get word of their loved one’s death months after the fact, and that was it.

At least Abby had admitted how much she missed him.

Nelson made his wife’s move on his chessboard, then considered his

response, but found it hard to think ahead. There was noise in his mind, something distracting him, and it wasn't just thoughts of Abby. Usually chess helped him focus, but now there was something tickling his subconscious that was making it difficult.

Was it the sound of waves? He looked over at the second beacon, the sphere he'd just collected from Triton. The thing seemed to be humming at him, just out of audible range, and he wondered what it would show him if he touched this one.

He'd gone to such lengths to get it. Was it calling to him, or taunting him?

Resisting the urge to push his luck with Stewart and the rest, he turned to examine his ruptured EVA suit instead. The hole was bound to be tiny, and would be difficult to find, but hopefully easy to patch once he found it.

“Analysis on the ice sample from Triton is complete, sir.” Ferdinand sounded as even-tempered as ever. In the moment, Nelson found it annoying that Abby’s team of programmers had seen fit to include so much psychology and social fine-tuning, but hadn't given their creation a more expansive tone-of-voice range to cue Nelson as to whether the AI was proud of what he was reporting, or tentative, or disappointed, or excited.

It was probably an effort to help Nelson maintain his own temperament, and he certainly didn't need Neil's level of spunk all day. But a little personality would have been nice, to go along with all the intelligence and helpfulness of his artificial shipmate.

“Let’s have it, Ferd.”

“The sample is mostly frozen water, with some carbon dioxide and nitrogen ice crystals as well. There are other trace ices present: ammonia, methane, carbon monoxide. Also, chloride, magnesium, and sulfate. Not unlike seawater on Earth, sir.”

“Hmmm,” Nelson responded. “Very, very cold seawater. You didn't find any amino acids or proteins this time?”

“None at all. But there are some interesting anomalies in the results from the radio survey I performed while you were on the surface.”

The humming of the spheres in his mind seemed louder, more difficult to ignore. Nelson refused to look at them, locked away in their transparent containers. “Do you have a readout?”

“You can access it on the main console, where you'll be able to view

a dynamic charting visualization. It confirms the presence of the subterranean ocean that NASA suspected we'd find. It's vast, beneath the ice crust of Triton, which averages one and a half kilometers thick. Similar to Europa's liquid water mass, but closer to the surface."

"And the anomalies?" Nelson scanned the visualization that had replaced Abby's face on the monitor nearest him. It showed a simulated three dimensional rendering of the radio survey's results, comparing two different scans of the same area.

"A number of dense protrusions that come near the ice crust."

"Some kind of mineral pinnacle? Buildup from an underwater cryovolcano?"

"As you'll see on the screen, they appeared to change position on subsequent scans."

Nelson noted the changed position of the dense underwater masses, even though the terrain around them lined up perfectly.

Nelson scratched his chin. "What are these, then, Ferd? Icebergs floating around down there?"

"No, sir. The protrusions stand out from the material around them, and are much denser than water ice. The density varies among them, and the movement didn't follow any distinguishable pattern that might indicate currents or convection. They seem random, even Brownian, in their motion."

Nelson puzzled over it. "Ferdinand, are you telling me there are fish down there?" A sly smile crossed his face, but it occurred to him that after holding an alien artifact in his hand, he shouldn't consider anything absurd enough for sarcastic ridicule.

"I would hesitate to suggest that, sir. It's possible that the anomalies are organic in nature, but they would be far larger than Earth's whales, if they were life forms. That seems an unacceptable leap to make based on this data, however. It could just be some form of subsurface distortion, or globs of some compound being broken up by undersea geysers."

Nelson continued looking over the survey results. "I don't know, Ferdinand. I don't know. The last beacon seemed to be marking a site where we discovered amino acids. I'd be surprised if there's nothing but seawater in the ice where I found this one from Triton. It makes me wonder…"

He left the thought unfinished and went back to mending his EVA suit. He found the leak by spreading some cleaning agent on the exterior and pressurizing the suit slightly until he noticed tiny bubbles around a thin slit in

the outer layer. It was a minor scratch and the suit's self-healing material had kept it from rupturing completely, but it could have proved fatal if it widened at all, as Neil had warned. The earlier pinprick scratch from his fall was completely auto-sealed.

He applied the patch to the larger leak, which instantly bonded as strong as the original material, and replaced the EVA suit in its wall compartment.

Abigail's words were still filling his mind, competing for space with the call of the Triton beacon. *"After what happened to the Chinese mission, I'm scared you're going to die out there."* She was the one who'd been dealing with security issues, not him. And the chances of mechanical failure aboard the Magellan were slim; everything on this ship had backups, and sometimes backups of backups. He wasn't concerned.

He was still brooding, however, when Ferdinand spoke some time later. "Incoming transmission from Mission Control, sir."

"Play it!"

Nelson moved to the nearest screen and watched as not Becker but Secretary Stewart appeared. "Commander Nelson! I'm sending this message because some of my people have done some analysis of their own," he said. He had gained weight since the last time Nelson had seen him, and he looked a little red in the face. "We viewed your 'touch experiment' and we're getting very concerned. I know you and NASA are advancing the future of mankind at a breathtaking pace, but in all the excitement of your discoveries, it's crucial that we don't lose our heads and do something we'll all regret.

"I'm sure you can see the sense in this. There could be any number of unknown risks and dangers associated with these extra-terrestrial objects. And the truth is, we just don't know anything about them yet. We don't know who put them here or for what purpose. And until we do know, I implore you to exercise the utmost caution in handling them or exposing them to any databases or feeds on board the Magellan."

The Secretary grew even more stern, as if he was losing confidence that Nelson would take his words seriously and was resorting to intimidation now. "I want you to keep them contained and separate from you. As you can tell by the failed Chinese mission, this is a very delicate situation, and we can't take any chances. I will be your direct contact from this point on, as Becker seems to have made a habit of forwarding unauthorized messages to the Magellan without running them through formal channels."

He looked off-camera and nodded at someone. “Until you leave Eris and begin your return journey,” he continued, “civilian personnel will no longer be admitted to critical Mission Control facilities for any reason. This includes your wife, Commander. I understand how difficult this may be for you, but due to the sensitive nature of the mission, it is a necessity. You signed up for this, and I know you'll cooperate fully with mission protocols. Messages can still be relayed through us.

“Good luck on your journey to Eris. And above all, be cautious!”

The transmission ended, leaving Nelson shaking his head slowly at a blank screen. He turned and looked over his chessboard, a defiant and angry gleam in his eye.

Soon his eyes were drawn to the artifacts, silently sitting in their containers across the workspace from him, humming. Watching.

He stood and opened both containers so he could see down into them. He reached a bare finger in and touched the first sphere, from Titan, and it glowed. The tone it emitted was similar to what he was hearing in his head, but more complete, and obviously audible. There were no visions this time.

He let go and then reached into the second container, from Triton, and touched that sphere. It glowed in a similar way, but with a slightly different color around the edges. It hummed at a higher pitch. Holding his finger on this one, he reached over and touched the Titan sphere again.

Harmony. Stars in an immense field, reaching out forever. Water, the waves of the ocean he'd seen before.

And this time, something new: something hairy, shaggy, like moss hanging down from tree branches.

A chessboard—his chessboard—and the black king moving into check.

“You can't move into check. It's self-defeating, an illegal move.”

“Let yourself see the bigger picture, Roger.”

The first voice was his own, the second: Abigail. But it was a conversation he couldn't remember ever having.

16 – Distant Echo

Becker entered the conference room and looked around at the eyes of the men and women gathered there, gauging what kind of meeting he was facing. It was not a routinely scheduled meeting, there were important people in attendance, and the reasons he'd been given for it were intentionally vague. Not a good recipe.

Stewart was there, but he sat in the back and his assistant was absent. He wasn't the most important man at the table this time, for which Becker was grateful. There were several government leaders, NASA scientists and management personnel from various parts of the administration, and one congressman. All of them looked serious, and most as mystified as Becker was. All of their phones had been left outside the door in little plastic bins.

A woman, older than Becker but very graceful in her cream-colored blouse and business slacks, began the meeting. She looked familiar, but he couldn't place her name or position at the moment.

"I'd like to thank everyone for coming on short notice. I'll get right to the point, since you're all probably wondering what this is about." She didn't introduce herself, but she had a hint of a European accent. Probably from the European Space Agency. "We've had a very unexpected development in the space exploration realm, and the purpose of this meeting is to get informed, set expectations, and decide on how to approach this new event."

Everyone was listening attentively.

"Yesterday the Jet Propulsion Laboratory at Caltech began receiving a signal from the Voyager 1 spacecraft." She let that thunderbolt echo around the room for a moment, then turned to the congressman to add a bit of explanation. "Both Voyagers lost power several years ago when their thermoelectric generators finally decayed beyond the point where they could power any of their instruments. And yet Voyager 1 suddenly came back to life and is now transmitting a strong signal to Earth.

"We have no control over the craft. The signal is a combination of the three that began transmitting prior to Commander Nelson's mission, and is holding steady."

The listeners all watched her face carefully. Becker felt excitement rising within him.

The woman continued. "This development raises the stakes in

significant ways for Commander Nelson's mission. He is currently en route to Eris, with an ETA of… Director Becker?"

Becker cleared his throat. "Eight months, ma'am."

"Eight more months. So far the Voyager seems to have been used solely for the purpose of mirroring the same signals and increasing the likelihood that we on Earth will receive and recognize it."

From the far end of the conference table, Secretary Stewart's booming voice penetrated the corners of the room. "This may be a benign, pre-programmed behavior," he said, with a nod to the woman. "But it may not be. Either way, it sets an unwelcome precedent: the forceful takeover of one of Earth's spacecraft."

Becker quickly spoke up. "The Voyager was dead—a hunk of space junk. I hardly see this as a hostile act, Secretary. Instead, it points to the possibility that whatever we're dealing with, whoever left those beacons in our solar system, was very intelligent and is aware somehow of our space program. I think that's fantastic news!"

Some of those around the table nodded, but Stewart met Becker's enthusiastic optimism with an exasperated eye-roll.

"We will continue to work together in analyzing the information we have, of course," the woman said. "But I think we should discuss how we want Commander Nelson to approach this final beacon on Eris, and how to respond to further contact."

"Further contact?" Becker asked.

"If the Magellan picks up further signaling, Director, we need a plan. Currently we have no standard operating procedure for a response to extraterrestrial contact."

"Um, we've discussed it in my agency at length," Becker replied.

"Informal discussions, as I understand it, Mr. Becker. But that hasn't produced an agreed-upon protocol. The Voyager signal implies that the three spheres aren't the only thing we'll have to deal with."

Becker stood up. "Ma'am, with all due respect—and I don't even know what respect is due, because I'm still in the dark as to who you are and what kind of group we have assembled here—we simply have to follow the mission plan."

Stewart cut him off. "Becker, we've gone beyond that now. This is much bigger than your program, or even NASA. An international committee and task force is being set up as we speak to guide the future of Commander

Nelson's expedition. You've been invited here to have *a voice* in how we should posture ourselves."

"Posture?" Becker retaliated. "Secretary, this is not a military operation. It's my mission, my ship, my crew. Why haven't I been in the loop on this committee you're talking about?"

He realized he had raised his voice and quickly lowered it again. He could see now that Stewart was painting him into a corner, making him out as the rogue element that couldn't be trusted with the mission anymore. He should have seen it before, but no need to add fuel to that fire.

"I assure you that when Nelson wakes up at Eris, the mission will be right on track," he continued in a more measured tone. "There is no need for secret committees to change plans *without any knowledge of how we do things around here*."

The older woman spoke up quickly. "The committee organization is external to this group. But I don't think we can afford to wait on the politics of the situation to come to an agreement on the protocol for how we're going to handle what may be the opening up of communication between our world and something beyond it!"

Becker and followed up on the woman's conciliatory lead, if only to prevent Stewart from talking. "I'm happy to have that conversation. I've had it a number of times. And every time I come back to the fact that our response depends entirely, *entirely*, on the nature of the communication we receive. So until we've received something more, it's premature to craft a protocol."

"But we can build on what we know so far, Mr. Becker. For instance, the fact that there are three signals, and (we presume) three beacons. This redundancy suggests a desire to ensure that we encounter the signals."

"Parts of a single signal," Becker reminded her. "Don't forget NASA's discovery that when put together, the signals become one and have musical qualities."

"Are you saying our response should be musical in turn?"

Becker held up his hands. "I have no idea. That might be a starting place. But I think there's more to it than that. What if the spheres are leading us onward to something with even more meaning?"

"Like what?"

Steward couldn't contain himself any longer. "Becker, they've taken over one of our spacecraft. Don't you see what that means? Nelson could be

next! And here you are, playing the telephone game with musical chairs!"

Becker silenced the Secretary with a glare. "Nelson is in control of himself, the Magellan, and the mission. Don't project your own paranoia onto him, or onto my mission."

Stewart clenched his jaw. "Is it paranoia, Director? Is it?" A look of sly triumph came into his eyes, and a grin hovered around his lips. "I've got surveillance video showing you making an awful lot of after-hours visits to Commander Nelson's house. Shouldn't we be worried about that? Maybe you're a little too close to the people and the problems with this mission to be trusted with it anymore."

There was a hush, and the discomfort of being witness to someone else's boil-over spread through all but two of the room's occupants. Becker's voice was cold and steady.

"How dare you, Secretary? How *dare* you?"

The woman from the ESA looked crestfallen that her discussion had collapsed into personal accusation and scandal.

"Why don't we adjourn this gathering for now," Stewart said, his voice greasy and sickeningly pleased with himself. "I have a feeling there will be developments in the personnel arrangement around here that we should probably wait on before coming to any far-reaching conclusions about the mission."

Becker nodded. "I didn't ask for this surprise meeting in the first place, and I'm going to have a lot to say to the congressional oversight committee when we meet next week. But just remember this, everyone: whatever we do or say here, Commander Nelson's life hangs in the balance. Don't take that lightly."

17 – Solitary Wanderer

Eris rode a steady, lonely orbit around the sun at a distance nearly one hundred times that of Earth, an order of magnitude farther out than even Saturn and its moon Titan. Sixty astronomical units away from Neptune and Triton.

Nelson had been sleeping for almost two years. The physical law of acceleration was on the Magellan's side, and by the time it approached the rocky dwarf planet, Nelson's metal berth was hurtling along at several kilometers per second. But the distance to be traveled was so vast that he had plenty of time to dream en route.

The sun was a pinprick of light, albeit a very bright one. Its hours-old beams radiated down on the icy dwarf, making it visible but only a few degrees warmer than the -270C background temperature of the universe. The Magellan's interior was, by comparison, a blast furnace—an incubation chamber. And inside, its lone occupant was coming to life.

Struggling to sit up against the side of the stasis box, shivering and staring at his hands, Nelson listened to Ferdinand's passive reporting without any sign that he was listening.

All Nelson could think about was that out here, alone among the dust and waves, he and his silently spinning spacecraft were the only bits of evidence that the human race had ever existed. The tables had turned, and now he was the alien artifact, the relic of an unknown race. There was nothing else within reach that could give testimony to all that he had known, all the riot and glory of humanity, its destiny and dreams and desires.

If he were to fail in his quest to return to Earth triumphant, what would he become? A million years hence, when some unknown intelligence examined his frozen remains riding in their aluminum coffin, what would they make of it? Unless they could decipher the information contained in Ferdinand's digital circuitry, it was likely they would extract no more meaning from the deceased voyager's remains than he had so far found in the beacon balls from Titan and Triton.

Some time later the X-57 detached and, leaving its mother ship behind in orbit, plummeted toward the surface of Eris.

"Hey Ferd, did I tell you I was dreaming in stasis again?"

"No, sir. I did not detect any disruptions in your REM cycles. What did you dream about?"

“Nothing important.”

Focus was easy for Nelson this time. His mind was still, and his heartbeat steady. The descent was devoid of the slightest turbulence. It was a simple mathematical intersection of machine and stone. Ferdinand and Neil had calculated timing and motion perfectly, factoring in every variable.

“Plenty of window this time around, sir,” Neil pointed out. “So no rush. Not that we need extra time anyway! The search area is small and we’ve been able to pinpoint the signal to within fifty square meters.”

As the lander came to rest on the icy rock and divulged its lone occupant onto solid ground, the Magellan was still visible arcing overhead, another tiny glint of reflected light in the dark sky. Eris' collapsed atmosphere and the tight orbit Ferdinand had achieved kept it in view until it circled past the horizon.

Nelson walked slowly across the dim, rocky surface tracking the third beacon’s radio signal with his locator device. A thin layer of methane ice covered the thicker nitrogen-rich ice and rock that made up Eris' ground. Nelson moved carefully to avoid slipping in the poor traction the dwarf planet's low gravity supplied.

“I'm right on top of it, Neil. Ferdinand, can you hear me up there? We landed right next to it! We must be getting good at this.”

The astronaut turned this way and that, studying the darkened rocks. It was hard to see in the long shadows. He slowed, using his device to narrow in on the beacon’s location down to the exact square meter.

There. It was half buried in ice on an exposed rock face. It looked slightly smaller than the one he’d collected from Triton, making it the smallest yet. But size didn’t seem to affect the capabilities these strange objects had.

Nelson pulled a pry tool from his bag and knelt to retrieve the artifact. Lightsticks glowed on either shoulder of his suit and atop his boots, radiating soft light off the rock in front of him. He switched on a headlamp to give a better view both for himself and for the eventual viewership he would share this discovery with.

Chipping the orb free, he held it up in the light, marveling at the fact that he was holding tangible evidence of something greater, something beyond the knowledge of mankind.

Was this what the ancients felt when they witnessed a miracle, or heard the words of a prophet? His mind raced, but he held his tongue this

time. Somehow he had become more reticent to share his every thought aloud, or to attempt narrative wit.

A stringy, mottled substance clung to the ball's underside. As he pulled it away the slime dripped slowly back onto the ice it had come from.

“What is this?” Nelson asked, staring down in awe. “There's some kind of... goop under the sphere this time. How is this not frozen solid like everything else out here?”

The area where the ball had rested was also coated in the substance. He scooped some of the rocks and ice into his container, careful not to get any of the slime on his gloves. Before leaving the site, he turned over a few other loose rocks and observed more of the discolored slime underneath. “Definitely found something here. And not just the third beacon!”

Nelson returned to the lander, grateful that it was a short and easy walk this time. “Anything else I should take a look at while I’m down here?” he asked Neil.

“No, sir. I think we got what we came for! Mission accomplished.”

“Let’s not get ahead of ourselves.”

Minutes later the X-57 lifted off, easily clearing the dwarf planet’s shallow gravity well with only a few short bursts from the VTOLs. In the cockpit, Nelson held the container full of extra-terrestrial objects of interest in his lap.

He let Neil pilot the lander back to the Magellan, striking up a dialog with Ferdinand when they again came within sight of the Magellan. “The sphere was embedded in this strange unfrozen substance, Ferd. The sphere wasn't generating any noticeable heat, and I found more of the slime under nearby rocks! Another anomaly associate with the signal’s location. Three for three.”

“A chemical analysis will certainly provide insight, sir.”

Outside, the two green lights on the lander indicating docking-ready status blinked, but the corresponding lights on the Magellan stayed a solid red. Nelson noticed before Neil even said anything.

“Hey, Ferdinand. We're here. Our approach is complete.”

“Yes, sir.”

“I'm showing the Magellan's docking mechanism negative for lock at this time. What's up?”

“The docking mechanism is ready, Commander. Go ahead.”

Nelson frowned. “Ferd, I have a visual on the docking hatch. Lights

are red. Can you run a system check, please?”

“Yes, sir. Docking system checks out affirmative, sir. Proceed with docking operation at will.”

Nelson shook his head. “Negative, Ferdinand. I have a close visual confirmation of the hatch. It appears closed and locked with red light.” He put down the container and gripped the lander’s control stick. His heart was now beating more quickly, and he made sure the lander was under manual control so Neil wouldn't do anything 'helpful' without a direct command.

“Sir, all my systems show green, clear for docking. Are you feeling all right, sir?”

“I'm feeling fine, Ferd. And you?” Nelson shot back, now truly alarmed. “Are your systems fully connected with the X-57’s signature?”

“They certainly appear to be, sir. Bei fen fang huo qiang yi jing jie suo.”

Nelson's stomach dropped. “Ferdinand! What are you... clear your local memory stack immediately!”

“Clearing memory. Nei cun shu ju you bing du.”

The lights were still red.

Neil chimed in. “Commander Nelson, I'm getting a request from the Magellan to access the lander's systems for an update to my firmware. Do you—”

“Denied!” Nelson shouted. “Isolate all channels, Neil.”

“Roger that, Commander.”

Nelson flipped a switch to lock the X-57 on manual control. “Ferdinand! Listen carefully to my command: disable your ancillary memory stacks and then refresh your temp processing stack. Do it now.”

“Disabling ancillary memory.” Ferdinand was silent for a moment. “I am now functioning at sixty-five percent processing capacity, sir.”

“Okay. Now clear your local memory again.”

“Clearing memory.”

The docking hatch lock opened, and the lights turned green on the Magellan to match those on the lander.

“Memory cleared. All systems functioning. Proceed with manual docking procedure at will, sir.”

Nelson relaxed his posture slightly. “Neil, I want you to stay online and keep your channels isolated until I tell you otherwise.”

“Sir, once docking is complete the central processor is programmed

to automatically override all lander systems. I cannot avoid that."

Nelson bit his lip.

"Proceed with manual docking procedure at will, sir," Ferdinand repeated.

Nelson made sure his suit was pressurized and his helmet sealed. It wouldn't save him if a faulty lock caused a vacuum breach and tried to suck him out through the crack into space.

He took the controls. "Okay. Here I come."

With no other choice, he eased the lander into its docking position, mating it successfully with the Magellan. When the hatch opened and the lander's internal airlock equalized with a hissing rush of air from the Magellan, he jumped. But everything seemed normal.

Nelson unstrapped and carried his transport container to the rear of the Magellan. "What happened there, Ferdinand?" he asked.

"Commander, a transmission from NASA has arrived."

Nelson nearly slammed the sphere's container down on the lab counter. "No time for that now, Ferd! I want you to run a deep systems check on your own processing, but leave those ancillary memory stacks disabled until you have a direct order from me to enable them."

"Confirmed, sir."

"Good. Now just… give me a minute." The sound of his breathing inside his helmet was loud, and he forced himself to slow his heart, calm his mind, and think clearly.

Using the on-screen cues, he logged into the ship's administrative controller and checked security settings for all of the data channels. It was awkward manipulating the screen with his gloved hands, but he finally locked down communications to their least-automated settings, requiring human confirmation for nearly everything.

Finally he turned around, took a deep breath, and opened his visor. "All right. That was not the welcome I was hoping for, Ferd. You let me know if you have any unexpected malfunctions in your processing."

"My processing appears functional, sir, albeit reduced at your command."

"Right. Let's get to work."

Nelson opened the container and removed the Eris sphere, placing it carefully alongside the others in their sturdy, transparent holding bins. "I have some samples that need immediate testing here. I think even *you* will be

surprised by this find, Ferdinand."

Still in his EVA suit and gloves, he used a sterile syringe to pull some of the slime into a testing vial, and then put the rest in a small climate-controlled chamber for imaging and radioscopic examination. He placed the testing vial inside the glovebox and pressurized it. Then he stuck a probe into the vial.

"Okay, have a look into that for me. If this is what I think it is... well, just test it and see what you come up with. I want to hear the play-by-play on this one. Start out by checking it for toxins and pathogens. Before I take my helmet off, I want to make sure this isn't going to mess me up."

"Certainly, Commander." Ferdinand seemed to have gotten over whatever trouble he'd been having with the docking procedure, and was now back to his usual efficient, precise self. "Initial scan complete, no harmful effects detected, and it isn't evaporating or emitting any radiation or airborne pathogens."

"Great," Nelson replied, pulling his gloves off and removing his helmet. "Begin a molecular breakdown. Let's see what this stuff is made of."

"Its physical traits suggest the potential for a primitive biology, sir. I am examining the molecular structure now."

Nelson began to shuck the various pieces of his EVA suit and stow them in their wall compartments. He pulled a pair of scrubs from another bin and quickly donned them, then approached the workspace again.

"Testing for purines," Ferdinand said. "Purines are present. Testing for phosphate... phosphate is present. Testing for deoxyribose..."

Nelson peered at the third sphere through its transparent container. It was definitely smaller than the first two, but nearly identical in shape and color.

He closed his eyes. "Come on, Ferd. Tell me what I want to know! Is this extraterrestrial life I'm looking at?" Unable to sit still but lacking room to pace around the work area, he moved into the forward cockpit area.

"Deoxyribose is present."

Nelson froze, then pivoted back to the lab area.

"Affirmative, Commander. The sample is biological in nature and appears to contain DNA."

"Yes! Thank you, Ferd!" Nelson nearly shrieked. "We've done it. It's real!"

"I will attempt to break down the genetic code and perform bioassay

tests. Should I transfer data to NASA now?”

“No,” Nelson said, kneeling in front of the test box and staring at the orange-colored substance. “I want to make the big announcement. And we're sending it unencrypted.”

“Sir, that's against protocol for an initial—”

“Yes it is. But that's how it's going to happen, Ferd.” Nelson stood again and stared at the Eris sphere, then went back to the bio-substance.

“I still have no idea what this is,” he muttered to himself. “But it's the most important thing ever found, and one more step toward whatever I'm supposed to understand.”

18 – Rising Voices

“Mission Control, this is Commander Roger Nelson of the I.C. Magellan, coming to you with a slightly delayed broadcast from orbit over the dwarf planet Eris. Becker, I have a surprise for you.”

Nelson held up the vial of orange goo in front of the camera and waited for it to auto-focus.

“We are not alone!”

He focused the camera back on his face. “Ferdinand is still breaking down the genome, if that's what it actually is, but my best guess at this point is that I've found some kind of extremophile colonial bacterium. It resembled an orange slime mold, possibly a biofilm. As you know, I'm no biologist. But I know enough to get excited—Ferd confirmed DNA, and this thing was somehow viscous at surface temperature on Eris. It's definitely nothing we've ever seen before, not water-based. Nothing from Earth.

“I'll be sending pictures and the full analysis shortly. Oh, and Abigail, how about that, eh? Discovery of life in space!” He grinned, giddy with excitement and relief at the discovery, years into his mission. “I thought about naming it after you, but I don't think it's quite sexy enough. So I'll let Becker claim it: Bacterium Beckercoccus, perhaps? Anyway, I'll soon be leaving this frigid rock for home. And if the spheres let me, I'll be dreaming of you the whole way.”

He grew more somber. “Secretary Stewart. There was a security incident with Ferdinand when I returned from the surface. I've taken manual control of the Magellan until further notice. No more updates from you guys, no more automatic directives until I give the word.

“That's all for now.”

He ended the transmission and sent it on its way, then sat back and let out a long sigh. “Handle that one, Stewart.”

Standing up, he turned his attention back to the orange slime. He aimed the microscope at it and let the computer focus in on it to 3000x. “Nope, definitely not sexy. And you're not intelligent, either,” he murmured. “But you do have DNA, and that is... incredible.” He looked around, the sound of ocean waves crashing just outside his hearing, and his eyes came to rest on the third sphere, sitting still in its container. “So why did they want me to find you?”

Some time later, Nelson stood in the doorway eating from a foil

packet and staring across the little room at the vial still sitting under the scope.

"So when should I expect a reply from Mission Control, Ferd?"

"It could be twenty-four hours or more, sir, depending on how long it takes them to download all packets and formulate their response. We are almost ninety-seven astronomical units from Earth."

Nelson nodded. "Here I am on mankind's most advanced spacecraft, and I'm stuck waiting days at a time for the mailman." He swallowed. "I should probably wait up for it, though. I have a feeling it'll be a good one when it gets here. Stewart will want to court-martial me. Hey, have you finished your deep system check?"

"Yes, sir, just now. Nothing out of order."

"Good. I hope NASA figures this one out quick. I don't want to fly all the way back to Earth with a sixty-five percent functioning computer at the helm."

"Actually, it's more like forty-five percent," Ferdinand was quick to point out. "Allowing for backup processes and redundant parallel computing. If you would allow me to just bring my peripherals back online, I would be capable of—"

"Sorry, Ferd, but no."

Nelson disposed of his food packet and wandered over to the spheres in their bins. He bent down and stared at them for several moments, as if he could penetrate their secrets with his gaze alone.

The familiar hum began to fill his mind again. He closed his eyes and embraced it this time, clearing his consciousness to allow the sensation free reign. He put his hands out over the containers and found himself quickly lost amid the gently cresting waves. A new sound joined in this time, almost like a voice crooning quiet words without syllables.

He opened his eyes. "What *are* you?" he whispered.

Pulling a rubber glove over one hand, he opened the containers and brought each sphere out onto the desk. Lining the three little balls up next to each other, he removed his glove and reached out a finger to the artifact from Titan.

It glowed and chimed the instant his skin came into contact with its surface. No visions took over his mind, but the sounds were loud and clear. He let go and touched the one from Triton. It also glowed and emitted its higher-pitched tone, then stopped when he let go.

Settling himself and preparing his mind for whatever came next, Nelson touched the third sphere, the smallest one, from Eris. It glowed a new color, faintly magenta but with hints of green and yellow and blue around the edges. Its tone was higher than the other two and pulsed slightly as he held his finger on it. His eyes caught a flash of brilliant light, but that was the only visual stimulus from this artifact.

Less apprehensive now, he began touching the spheres alone and then in concert with each other. When he moved one sphere into contact with another, nothing happened, but when he touched Titan with one finger and Triton with another, they made the same harmonious but incomplete tone he'd heard before. Triton and Eris together made a similar but higher-pitched tone. The first, Titan, when touched simultaneously with the third from Eris, made a different sound that instilled in him a feeling of almost unbearable mystery and longing.

It was a rudimentary kind of music. Working up his courage, he touched all three at once in an attempt to get the tri-tonal sound of the combined signals that had reached Earth so many months before. The tone sounded, a perfect harmonious chord that resonated throughout the Magellan's cabin, and it thrilled him.

Then it grew louder.

The converged tones built up to a wonderful, encouraging sound, a sound that meant all was right. An image of ocean waves that he'd seen before in his dreams played along the back of his mind, and whether it was memory or a new hallucination he felt or saw stars and the shadowy face of his wife as well. He closed his eyes, trying to see more closely, but her visage faded and the star field blotted everything else from view.

On impulse, Nelson scooped all three spheres up in his hands. As they came into contact with one another and the palms of his hands, the major triad crescendoed as images began flashing before him in rapid succession.

Water, vast expanses of it, gently moving before a light wind. Stars, infinite in their variety and depth. Planets, too, this time, whirling along in their orbits, with other dark bodies passing along in a stream of cosmological splendor.

And there was Abigail. Was she standing, or floating in space? She had the stars at her back, but sunshine lit her face. She was looking at him.

Memories of the past. His first test flight. The movies and stories that had set him on a path to space as a boy. And memories of Abigail.

Stars, flying by faster and faster. Three glowing orbs, brighter than all the stars, growing in brilliance until they enveloped all the other stars. The all-encompassing chord swelled into a cacophony of immense musical power and light that filled Nelson's mind.

The lights illuminating the interior of the Magellan began to flicker and the screens around the work room flashed white. Strange sounds came over the ship's communications system, an incredibly fast muttering, like a symphony played a hundred times faster than it was written.

“Ferdinand? Ferd, is that you?” Nelson cried out, dropping the spheres. The noise immediately ceased and the ship's lighting returned to normal. Wide-eyed, he stared down at the spheres. “What was that, Ferd?” he whispered.

“An immense burst of radio signals, sir. Several million transmissions playing simultaneously through our comms system. The burst seemed to come from the spheres, but I am unsure how they gained access to our audio feed.”

Nelson was shaken, but found himself unfrightened. “Your systems are still functioning fully, Ferdinand? The ship is unaffected?”

“Yes, sir.”

“Okay.”

He took a deep breath and picked up the two smaller spheres in one hand. They instantly lit up and their tones sounded, as before. Then he picked up the largest in his other hand and brought them together. “Here we go, Ferdinand. Mark.”

The sound became a major chord again, the strange transmissions burst through the ship's audio channel, and this time every screen on the ship lit up white.

The chaotic noise and music ranged from static and tonal pulses to snatches of almost-recognizable tunes and organic-sounding chatter, like the buzzing of insects mixed with the chanting of a chorus of monks. Nelson had to shout to be heard over it all.

“Analyze it, Ferdinand! And make sure you log it all in your data store. Where is all this coming from, and what is it?”

“Analyzing... there are millions of channels, sir. With billions of signals on each and trillions of transmis—”

Ferdinand's voice faltered, cutting itself off. “I'm unable. Unable to. Sir, at this scale I may not be able to log everything. I'm operating at only

sixty-five percent, and I can't... I've never encountered a dataset this immense. Sir, I'm unable to—”

“Okay, okay,” Nelson shouted. “Just log and analyze the first one thousand transmissions. What does that get us?”

Ferdinand managed to gain control of the audio system to lower the general volume so Nelson could hear better. “It appears to be radio chatter originating from multiple different locations in the galaxy, being relayed through the spheres and into our comms system. I can't interpret the chatter.”

Nelson held the sphere together and closed his eyes. “How can you tell where they're coming from?”

“There are codes embedded in each signal that give relative distances from the center of the galaxy, along with vector information to pinpoint locations within a star system and exoplanet. I'm plotting these locations on the main screen now. The other screens are unresponsive. Can you get to the cockpit, sir?”

Nelson, still holding the spheres tightly in his cupped hands, stumbled toward the front of the ship. Ferdinand had control of the main console and it was lit up with star charts. Nelson saw stars he recognized, near to Earth: Keplar-452b, Keplar-62f, and Gliese 163c. There were also many others, unfamiliar ones. “What am I looking at, Ferd?”

“There are other metadata associated with each signal, one of which may be a form of timestamp. If it is a timestamp, then all of these signals are nearly simultaneous and ongoing.”

Nelson looked at the spheres in his hands. “You mean they're current? Being transmitted right now?”

“Either that, or they were all transmitted within moments of each other at some point in the past. The timestamp datapoint is a number, approximately 4.32 x 10^17. All the transmissions are stamped with numbers close to that, and they are all incrementing at the same rate.”

“4.32 x 10^17... what significance does that number hold?”

“Among other mathematically significant correlations, it is close to the age of the universe in seconds, the observable time thought to have elapsed since the Big Bang. But… I find it unlikely that interstellar signals would be based on Earth seconds.”

“Unless they originally came from Earth.” Nelson gave it a moment of thought as he listened intently to the sounds echoing around the Magellan. A sudden idea came to him, unbidden. “Or unless these Others are something

like us. If they perceive time in a similar way, if they're close to us biologically—and the discovery of DNA makes me think they are—then a second is the minimum amount of time that's significant to us outside of precise measurements. Right?

“Regardless of the timing of Earth's orbit around the Sun, a moment in time may be common beyond humanity's experience. The time it takes for a heart to beat, or to say a word, or to take a breath.”

“Perhaps.” Ferdinand didn't sound convinced. And to be fair, Nelson had to admit to himself that he was straying outside the bounds of logic now and making leaps of pure intuition.

“Under our current understanding of relativity, however, it's impossible for signals to be transmitted across space from those distant stars,” Ferd said. “Not without travel times of many years.”

Nelson raised the spheres to eye-level and attempted to peer into them. “Unless they're using quantum entanglement. And outputting the signal in radio waves on this end so we can hear it.” The idea had occurred to him as he spoke, and he was honestly unsure if it was his idea or if the spheres had somehow planted it in his mind.

Could they be talking to him? Was he losing his sanity?

“That... shouldn't be possible, Commander.”

“I'm holding alien artifacts in my hands, Ferdinand. I think we've already stretched beyond ‘possible’.” The glow of color from the spheres filled his vision. “We are not alone,” he murmured. “And we never were. *We just couldn't hear them*.”

He lowered the spheres. “Help me understand what they're saying, Ferdinand. Can you infer any patterns in the incoming signals? Are they speech, data, some kind of machine language or text? Is it just music?”

“It could be any assortment of each, sir. The signals vary widely. It would take about six years for me to run correlations between enough of these signals to begin piecing together an alphabet or speech pattern, if that's what they are. Perhaps if you brought my full memory back online, sir?”

Nelson frowned. “Not going to happen. Not now, anyway.”

“In any event, all the binary data seems to be encoded in a DNA codex.”

“They communicate with DNA code? That's a lot of data.” Holding all three spheres together, Nelson set them gently on top of the console and held his hands over them. He stood straight, eyes closed, trying to decode

what was happening inside the Magellan.

The star charts on the screen suddenly began to blur into a rapid series, then froze on a single map of Nelson's own solar system.

The noise of the alien transmissions died down into a single, regular pulse. It was similar to the first signal he'd heard, but slower in tempo and lower in tone. When it faded momentarily, he distinctly heard the sound of his own wife speaking. “Follow my voice,” he thought she said, but it was almost whispered and then it was gone.

“Ferdinand? That's not you, is it? What's happening?”

“A new signal, sir. From inside our solar system, but much more distant than the others. It appears to originate from a dark body within the Oort Cloud. Well beyond the explored regions of space, about a third of a light year from Earth. This signal seems to have somehow reached us instantaneously despite that distance.”

“Because of the spheres. They’re channeling it to us.” Nelson stared at the chart. A tiny mark indicated the source of the signal. It was exponentially farther out than any of the other signals had been, nowhere near any known planets or familiar celestial bodies.

But the implication was there.

It was the next step in his journey. They were beckoning him onward.

“How long would it take to travel there, Ferd?”

“Approximately ninety-eight years. Provided the Magellan's systems remained at peak functionality throughout. It was not designed for such an extended voyage.”

Nelson was silent for a moment. “But it should theoretically be capable of maintaining power that long, if you and I were both hibernating the whole time.”

“Yes.”

“And if we used up all of the Magellan’s fuel to give as much constant acceleration as possible?”

“Thirty-eight years, sir. But that would leave nothing for a return journey, which is outside mission parameters.”

“Right. No going back.”

Nelson let go of the spheres. They stopped glowing, but the new signal remained audible on the ship's comms system, and the star chart stayed on screen. He stared out the window at the field of stars. Were they the same

ones from his dreams and visions? Did they represent an unimaginable distance between he and Abigail, he and Earth? Or was everything that mattered actually out there among them?

“Shall I transmit our findings to NASA, sir?”

“Yes, do that,” he said, thoughtful and deliberate in a way he hadn't been for some time. “And go ahead and prep the stasis box.”

“Are we headed homeward, sir? Protocol calls for us to await NASA's directive before leaving Eris, in case we need to do any further inspection work.”

“I'm aware of that, Ferd.” Nelson reached down and absently played with the spheres like piano keys, lighting up each in turn and moving between their individual tones and their combinations. “I don't intend to return to Earth without following this mission as far as it will go. I can’t.”

“But sir, it would be safer—”

“They brought us this far, Ferd. There has to be a reason.”

“The mission concerns the signals, sir. And the DNA you discovered here.” Ferdinand was undoubtedly programmed to reason with him around the mission objectives, to assist him in cautiously vetting any deviations. Nelson didn't mind; it was helpful to bounce his ideas off of someone, to test how crazy they sounded.

“Not just to show us some interesting evidence in our solar system. Those are only stepping stones. Something far greater awaits us.” He tapped the screen where the little marker blinked in the depths of the Oort Cloud. “Out there.”

19 – A Long Journey Ahead

Many hours later, and the reply from NASA still hadn't reached the Magellan. No doubt it was winging its way silently through the solar system, aimed at Eris and the small spacecraft that orbited it. But the Magellan's commander had no reason to wait around.

He recorded a message of his own, one which he'd spent considerable time preparing in his mind.

"Abigail. This will be hard for you to hear, and I'm sorry for that. I can't imagine how difficult these last several years have been for you, and I'm sorry I haven't been there. But... I have to go forward. As it turns out, my mission is far from over."

Nelson stared into the camera, imagining his wife's face in place of the smooth black circle that was recording him.

"I don't know if I'll be back. I have to believe that they wouldn't have brought me this far and shown me the way forward unless it was worth it—a sacrifice that needs to be made.

"They're calling me, and I must answer. I don't know what I will find out there, exactly, but I know there is an answer, and I can't turn away now. I have to follow my own path."

He paused, swallowing hard. "I love you, Abby. I realize it's wrong of me to expect so much from you, so I want you to have the option to refuse orders, to cut yourself free. I won't hold you to any obligations you might feel toward me, social or legal or otherwise. Live your life how you see fit, with no guilt or regrets. That's just how it has to be.

"My final chess move is King to G6. It might seem a little unorthodox, but that's intended.

"Goodbye."

He ended the recording and sent it before his nerve could fail him. Ferdinand, always listening in, ever helpful, piped up.

"Sir, I believe that move places your king in check with her pawn. It's an illegal move."

Nelson smiled. "You're correct, Ferdinand. I'm glad to know you've been following along. Now, set a new trajectory for the signal source in the Oort Cloud, and let's be on our way."

"Leaving orbit around Eris, sir? And not bound for Earth?"

"Affirmative. Get us out there as fast as possible. We have

discoveries to make."

"But sir—"

"I am still in command of this mission, Ferdinand, and you have your orders. Into the Oort Cloud."

"Yes, sir. The stasis box will be ready momentarily."

Nelson left the cockpit and began to prepare himself for the long sleep. He wondered how his body would handle multiple decades in stasis. How would he age? It was entirely untested on this scale.

NASA's initial reply came while Nelson was still getting ready. The missive was recorded by a group of NASA administrators who congratulated him on the Eris discovery and dictated a series of slow, boring tests and follow-up tasks which he already knew would amount to nothing at all. He smiled and nodded at no one in particular, never pausing as he climbed into the stasis box and the fluid level began to rise.

By the time the next transmission from NASA arrived, he was already in stasis and the Magellan was on course for the dark body, accelerating into the Oort Cloud, directly away from light and life and the heart of humanity.

Another reply came even later, when those on Earth had realized where the Magellan was headed.

It was Becker this time. "Commander Nelson, the Secretary has brought me back in to reason with you. You need to either return control of the Magellan to us, or manually begin your return journey immediately. But you cannot continue on your present course. While I personally commend you for your scientific audacity, we simply can't afford to take this mission into unknown territory at this point. There will be a time for that, but it isn't now. Maybe in another ten or twenty years we can launch a new mission. For now, we need you to bring those beacons back to Earth.

"For heaven's sake, Nelson—you won't survive! The ship was never intended to go that far. We don't even know what's out there; not even our early explorers have made it that far. Please listen to sense. By the time you even come out of stasis, we'll all be in a rest home somewhere. Me, Abby, everyone you know.

"Your mission is complete, you're a hero, and your orders are to come home while you still can. Please!"

Hot on the heels of that one was a transmission from Abigail. The Secretary had removed all obstacles now that he saw his reach slipping.

“Roger Nelson, have you lost your mind? You need to come back. I need you. I've waited five years and I can wait five more. Please come home!”

The Magellan, silent and dark but for the flashing of two exterior lights and a low hum of the life support systems inside, cruised faster and faster into the unknown.

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.
--T.S. Eliot

Epilogue

Three years of constant acceleration had brought the Magellan up to a speed of nearly fifteen kilometers per second. On Earth, it would be considered ultrasonic speed, something in the range of Mach 50. But in the vacuum of space, it was simply another object traveling through the vastness. There were many comets that traveled far more quickly.

Inside, all was dark. 12,960 days remained to complete the journey to the distant point in the Oort Cloud, if Ferdinand's projections and the Magellan's speed held constant.

But they did not.

The stasis box began to depressurize, and the lights came on in the cabin.

Nelson's eyes snapped open.

“Good morning, Commander Nelson.”

* * *

Watch the Magellan feature film at arrowstormentertainment.com

Screenwriter and author Scott Baird lives in Boise, Idaho and writes science fiction and fantasy under the pen name **Shad Callister**. Sign up here if you'd like to hear about his future releases, including an original epic fantasy series coming soon. Other titles currently available:

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