

Our First Steps

Chapter V – Minus Ten and Counting

Somewhat nervous the entire workshop was watching her, Zvezda nevertheless grasped the welding torch with her mouth and pushed its long electrode against the metal hull of the rocket. Confident everything was prepared, she readied her foreleg on the small control pad that lay on the floor, then slowly increased pressure on it.

The torch sprang to life, electric current beginning to flow from the wall socket, into the electrode, through the metal shell of the rocket, then returning through an affixed clamp. Sparks started flying everywhere, and Zvezda was again very thankful for her darkened goggles. Smoothly running the torch alongside the length of the seam, she slowly moved her head inwards to keep the electrode's tip pushed up against the metal as the rod consumed itself.

Finally, the seam was complete, and amidst loud cheers, Zvezda lifted her leg off the pressure pad and took a step back to inspect it. No bubbles, no oxidation, filler evenly spread. Finding that acceptable, she spat the torch back on the ground and turned around victoriously. The entire workshop sprang into celebration, hooves impacting the concrete floor while the supervisor began singing a rather off-key rendition of the *Ballad of the Metalpony*.

As Sara, Blues, and Terra rushed forward from the audience to congratulate her on a job well done, Zvezda allowed a confident smile to creep up on her face. Unless the Director suddenly managed to pull out new rocket parts of out nowhere, this would be the last weld she'd make for an entire month. The balloon back to Manehattan would arrive on Monday, and she'd finally get to spend her fat paycheck. There was still some paperwork to finish off, but for now, party!

Having finished butchering the old metalworkers' melody, the supervisor cleared her throat and let the workshop fall silent:

„I must admit, team, when I first saw that big pile of components back in Stable VI last week, my first thought was, 'There is no way in hay we will ever put that together on time'. But, as the days went on and I saw you put your skills to practice, I slowly grew more and more confident. Though we've hit some setbacks along the way, you ponies soldiered on through them and proved me wrong. I salute you.“

The assembled crews began fervently clapping their hooves against the ground again, but the supervisor quietened them and continued:

„What you are doing here is something amazing. Something never before attempted by pony hooves. Though coming from common backgrounds, you've nevertheless managed to pick up

revolutionary assembly methods, apply them to problems never before solved, and built something, well, magical.“

Another applause, another silencing:

„Although you've all done a great job, there is one pony in particular I must thank. Would you be so kind and come up next to me, Sara?“

Gasping with surprise, Sara looked around to her friends. Seeing them smile back, she uncertainly made her way up to the supervisor's side.

„Sara, your unyielding dedication to the project is something that amazed even me. No matter how many unexpected problems there were, how impolitely we asked; You were always willing to do your best. Therefore-“ the supervisor paused for dramatic effect, „-In honour of your efforts, we are dedicating this rocket to you!“

On command, two unicorns levitated a small plaque up to the hull, where it was welded to the metal by a prepared pegasus. The small sign read:

„Core cluster sounding vehicle (rev24) – Unit VIII ('Sara Goldhooves')“

„Here's a second copy to put up on the wall and show off with,“ the supervisor winked, handing the plaque to Sara, before turning back to the rest of the workshop's crew: „Now, I know you all deserve it, so there's a small buffet waiting for you in Stable IV. I *was* going to hold it right here, but the Director insisted that drunken ponies and tin cans stuffed with high explosive don't mix.

Anyway; Vehicle Assembly Crew, dismissed!“

As they left the workshop, Zvezda turned around for one last look at their creation. It seemed... disappointingly small. Considering all the effort and overtime they had put in, all their sweat and tears and waking nights, the final rocket wasn't actually all that big; Perhaps six pony-lengths from puffy nosecone to stubby nozzle, and two pony-heights in diameter. Still, it was much bigger than any of those previous fireworks shown in the archive footage, so Zvezda was satisfied.

Turning around again to catch up to her friends, she caught sight of the hat-wearing ponies approaching, presumably to tow the rocket to the launchpad. Not particularly wanting to be left alone with them – doubly so, given the quickly disappearing daylight – she galloped off towards Stable IV.

~~~~~

„Three, two, one, fire!“

Nothing happened.

Exclaiming in frustration, Lyuka took her hooves off the firing console and ran back to the launchpad. The sun had long since gone down, and the launch crew were left trying to work by the weak light of several lamps that lay strewn about the site.

The rocket was still a way from the pad, but it was approaching rapidly, and Lyuka really did not want to have another delay. Trotting up to the pad base, she complained:

„We *could* have just used a fuse to light the thing, but no, the Director wanted a nice and shiny electric igniter!“

Her horn glowing as she levitated bundles of cabling and capacitor jars around, Sequine replied:

„Other designs much smaller. This one too big. Needs electrics.“

„I know, I know,“ Lyuka sighed, „But it just seems that with each launch, we're using five new groundbreaking technologies that had never before seen the light of day. No wonder it all keeps blowing up.“

The air around them clicked as Sequine repeatedly tested new connections, broke them up, then spun the components around again for a new attempt.

„First, weak metal. Then, shaking itself apart. Last time, lack of stabilization,“ Sequine casually recounted whilst levitating hundreds of individual components in a large spinning sphere above her head, „Should be good now.“

„Yeah, right. Everytime we're sure we got absolutely everything perfect this time around, a new problem appears out of thin air and the stupid thing just explodes. It's just, no matter how much we try, this whole thing just seems *too hard* for ponies, you know?“

„Not rocket. Igniter. Rocket will blow up. Igniter works,“ Sequine clarified, gently lowering the ball of tightly knit components into a prepared shallow pit which would serve as the base of the launchpad.

Rolling her eyes, Lyuka trotted off back towards the firing console. Pressing the ignition key, she jumped back as a bright shower of sparks momentarily blinded her.

While her vision recovered, she considered the strange pony's words. *Rocket will blow up. Igniter works.* Judging by their track record, she was probably right. Depressed, Lyuka tried the igniter again to ensure it wasn't a fluke, making sure to shield her eyes this time around.

Satisfied the ignition system was reliable, Lyuka inspected the strange unicorn. She was just standing there, utterly immobile, a faint dumb grin of satisfaction on her face.

„Aren't you *ever* depressed?“ she shot off in frustration.

„Why? Director buys room, food, all wires and relays I want. Is nice here.“

Some ponies had very low expectations. Shaking her head, Lyuka powered down the console,

then crossed another line off her checklist.

~~~~~

Cherry woke up, bathed in cold sweat. A second of terrified confusion followed as she scanned the alien surroundings; Then her brain switched back on. She had finally managed to persuade the nurses to let her out of the hospital, on the condition she stays in her quarters the entire time until full recovery.

Whether it was the new surroundings or the upcoming test launch, this was the third time she had been torn from her sleep this night.

It was always the same dream: Sitting inside that small capsule, all suited and connected up, the countdown rolling along normally... then the warning lights would flare up. She would pound on the entry hatch, repeatedly hit the abort and ejection buttons, and nothing would happen. She'd spot Geist behind the small round window, working furiously to get her out of there. Then, somepony'd shout „Fire! Fire on the pad!“ the cabin would fill with choking white smoke, and a tremendous explosion would jar her awake.

Getting off her bed to get a jug of water from her fridge, Cherry thought about it. All this worrying was stupid. All those attempts were test flights. Test flights are supposed to blow up, so that the real thing doesn't.

Then again, that hated part of her brain would say, The Director has had a perfect 100% failure rate. She's skipping tests, rushing at every opportunity, and hasn't yet begun cutting the metal for the capsule you'll go up in. Even the training programme is a deathtrap!

Sipping on the refreshing cool water, she tried to make counterarguments. The only convincing one she could come up with revolved around the upcoming launch. And as rumour had it, even the ever-optimistic Director was expecting that to fail spectacularly.

Throwing the rest of the jug's contents into her face, Cherry puffed. There was no way she was getting any more sleep tonight. Looking around to glance at the clock, she noticed it was still three in the morning. Plenty of time, then.

Lighting the small lamp on her desk, Cherry got some paper and put it on the table. Grasping the pen with her mouth, she stood immobile for a while as her brain arranged itself, then began:

„Dear ma, pa,

I'm sorry I didn't write since leaving the Academy. I know you must be worried, and I wish I've done this earlier. I know you still don't approve of my decision, but I don't care anymore. I just want us to be family again.

Life's been busy here at the facility (I don't think I'm allowed to even write its codename here). Training, tests, more training, more tests – they are big on tests, these ponies. I never even dreamed of doing something like this, but that makes it all the more exciting! They are doing some incredible things here, and I just wish you could come and see your Cheery in the middle of it all. Maybe sometime in the future, when security isn't so tough.

How is little Rosie? Has she started flying yet? Tell her big sister's missing her so much! Anyway, I just wanted to you know everything's going well, and your little filly is safe and sound.

*Lots of love,
Cherry“*

She read the letter over again. Yeah, that would do.

Turning the light back off, she left the paper on the desk and returned to bed. Maybe she'd send it off in the morning. *Then again*, she thought, remembering her father's last words as he slammed the door on her. Maybe she wouldn't.

~~~~~

Tumbling into the kitchen, Zvezda uncertainly veered from side to side as she tried to find the sink. Some crazy pony had somehow smuggled several barrels of apple cider onto the Cosmodrome, and now the entire vehicle assembly team was paying the price.

Synapses firing slowly, it took her about ten seconds to realize the light was on. It took her a further ten seconds to notice the busy pink pegasus in the middle of the kitchen, furiously working on something.

„Te- Terra?“ Zvezda slowly got out, „What are you doing?“

„Preparing some popcorn, duh,“ came the incessant reply.

„Popcorn?“

„Well, yes. Think about it, it's gonna be a great fireworks show. And all the assembly crews get their paychecks tomorrow. If I show up there selling popcorn, I'll become a billionaire overnight!“

„Sounds good,“ Zvezda blinked slowly, „Mind if I join in? I wouldn't mind having a million or two.“

„Sure, no problem. Just find me some apples. Can't make corn without apples.“

It took several further seconds before the web of logic completed itself in Zvezda's mind:

„Apples? Sure. Just wait a bit, I need to use the sink.“

~~~~~

The Chief Director paced around her quarters, stealing the occasional frightened glance at the massive schematic pinned up on the wall, then turning away quickly before her eyes have had the time to spot any glaring mistakes. She was convinced there were still at least a dozen of them, just lying there, silently laughing at her. But it was all too late to fix them now.

As she went through this routine, she mumbled to herself.

„The real thing'll have a redundant control system; So it won't matter if this one veers off course and explodes.“

„The nozzle is just an experimental design, we can always go back to the old model. Granted, that one blew up on the pad, but we can work around that.“

„We've remixed the new fuel grain, so it shouldn't ignite prematurely anymore. There's nothing that can go wrong.“

„It's just a simple test of the modular booster rings. If they work, it doesn't matter if everything else crashes and burns.“

„It doesn't matter.“

She paused in her tracks for a while. Self-deception was a surprisingly difficult thing to pull off consciously.

~~~~~

Geist turned peacefully in his bed. His mind still full of ideas for the Starwalker simulator, it wasn't too surprising that his dreams revolved around galloping back and forth through a long corridor, constantly flipping random switches on the walls. Every so often, candy would drop from a trapdoor in the ceiling, and he'd stop to devour it all before running back to the switches.

Mumbling something incomprehensible, he snored once, then carried on as before, a wide unworried smile on his face.

~~~~~

The time was finally here. The rocket towered proud on the launching platform, having been painstakingly erected there from the horizontal position by teams of hung-over and sleep-deprived pegasi early in the morning.

Circling around it for what must have been the thousandth time today, Lyuka scrutinized every last square inch of the vehicle's hull. Both above and below her, her teams of pegasi were doing the same, or at least trying to.

Trying to concentrate on the rough metal skin, Lyuka noticed it was slowly sliding out of focus. She shook her head and looked at it again. Slightly better. Wiping the sweat off her forehead, she idly wondered when was the last time she drank something. Probably yesterday lunch.

„Boss, please! This thing isn't getting any better the more we stare at it!“ a blue pegasus above her pleaded, hovering uncertainly above Lyuka.

„Have you checked the nose seal yet?“ she snapped back.

„Yes! Five times now! Five! I know this is our biggest rocket yet, but that doesn't-“

„Well, go check it again!“

The pegasus stopped, considered her words for a few seconds, then simply gave her Equestria's most flippant salute and flew off towards the rocket's tip. Turning to the towering vehicle again, Lyuka suddenly noticed a single grain of sand had become embedded inside the tiny separation ring between two protective plates. Blowing at it, Lyuka was satisfied to see it disappear.

Suddenly, the rocket emitted a terrible creaking noise. Shocked by its volume, it took Lyuka a few moments to remember she was still in the air. Quickly levelling out before she hit the ground, she demanded:

„What was that? What? Report, now!“

A tired Wilhelmina sounded back from the ground:

„It's just the rocket, L! The metal's expanding in the heat!“

Oh yeah. That was the third time today, wasn't it? Lyuka re-focused her eyes again. Silly brain, getting tired so quickly.

„Don't you think we've done enough testing? If we leave it any longer, the batteries will run out and we'll have to swap in new ones! Again!“

„The batteries!“ Lyuka suddenly screamed. Rapidly ascending towards the vehicle's top, Lyuka uncovered a small access panel at the base of the nosecone. Quickly stamping the small button hidden underneath it, she verified this lit up the small lightbulb positioned nearby. She was just about to let out a sigh of relief, when Wilhelmina interrupted:

„L, that is enough! By the authority of Chief Director, I hereby declare the pre-launch hold complete! Crews, final report!“

„But what about the-“

„Now!“ the Director screamed. Lyuka was about to object, then one of her subordinates shoved

her hoof into her open mouth. Too tired to resist, she simply resigned herself to hovering idly.

„Manoeuvring system pressurized!“ shouted a pegasus from the opposite side of the nosecone.

„Confirming no leaks in segment joints!“

„Roll program loaded.“

„Let's go already, then! Everybody, vacate the pad!“ the Director commanded, herself proceeding to gallop away from the rocket.

„Aerial photography crews, in position!“ the pegasus covering Lyuka's mouth voiced the order for her. Saluting, Lyuka's team of pegasi flew off upwards. With an evil glare to the assistant director, the subordinate removed her hoof, then followed them off.

„Film crew, start rolling!“ the Director commanded. A pair of earth ponies stationed beside the launch console began playing with their large device.

Lyuka took one last look around. The launch pad stood alone in the middle of the desert, a fair distance from the rest of the Cosmodrome. The only physical connection between the two was a pair of rail tracks, running from the massive iron gates of Stable VII to the firing pit.

In a large semicircle around the pad, the entire population of the Cape had gathered for the big event. She spotted that two enterprising ponies had opened up a stand offering salted popcorn, but they didn't seem to be getting much business. The mere sight of salt suddenly made Lyuka realize just how thirsty she was.

What ponies weren't in the semicircle lay positioned at various strategic positions in the desert and the sky, intently watching the vehicle with telescopes and cameras. If – *when*, Lyuka corrected herself – the rocket failed, their photographs and observations would provide valuable data. Hopefully.

Glancing for one last time at the unpainted metal grey cylinder of a rocket, Lyuka gritted her teeth and landed in the sand next to the Director.

„Any last words, Chief Designer?“ she asked sarcastically, remembering those hopeful long-winded speeches that had been held before prior launches, whose idealism had always rang so bitter after the inevitable failure.

„Just get on with it,“ she snapped. And with a nod to the launch announcer, it was off.

„Sounding rocket eight, the Pad Führer has given final confirmation,“ the pony spoke through her megaphone. Lyuka could see Wilhelmina grit her teeth at the nickname, but not say anything; Presumably not wanting to delay a moment longer.

„Commencing launch in T minus thirty seconds.“

Readying her hooves on the ignition console, the Director began inhaling deeply.

„T minus twenty five seconds.“

With a dim glow surrounding her horn, Sequine disconnected the last few cables from the nosecone and levitated them outside the blast radius.

„T minus twenty seconds, guidance is internal.“

A green bulb lit up on the firing console.

„T minus fifteen seconds. Ignition capacitors confirmed charged.“

The noon sun had been ceaselessly boring down on everypony the entire day, unbearable in its intensity almost the entire time. The sand was scorching her green skin. Even so, Lyuka began shivering with cold.

„T minus ten.“

They had skipped too many tests. Rushed too fast. It was all too clear to Lyuka.

„Eight.“

There was nothing left to do now. Nothing but pray. Judging by the sheer number of silently praying spectators, Celestia would probably be getting a headache right about now.

„Seven.“

The anticipation was unbearable.

„Six.“

How long would this one last? Five seconds, ten?

„Five.“

„Four.“

„Three.“

Screaming in a sudden release of all her pent up frustration and rage, the Director slammed the ignition switch with her face. At the last millisecond, Lyuka remembered herself and tightly sealed her eyes.

Even then, the effect was incapacitating. A flash so bright, it penetrated her eyelids. A blast of hot air rushing outwards, showering her in sand. A harsh roar of pure white noise, deafening her. Even the very air around them seemed to be shaking itself apart.

Despite the omnipresent assault on the senses, Lyuka smiled. At least this particular failure would be far more spectacular than ever before.

Blinking rapidly to get her vision back, Lyuka observed the aftermath. The launchpad was simply gone, the ignition device and support cranes turned into molten slag. The surviving cables were on fire, their thick plastic insulation releasing poisonous black smoke. The service crews would have their work cut out for them.

That was for later, however. She quickly looked upwards. Somehow and against all expectation, the vehicle was rising fast, riding atop a mighty ball of searing white fire and thick black smoke. Once upon a time, the sight would fill her heart with excitement. Now, it was just exhausted pessimism.

„T plus five seconds! Begin roll.“

Unbelievably slowly, the vehicle began turning to its side, almost royal in its fiery grace. Stealing a quick glance at Sequine, Lyuka wasn't surprised to see an impossibly smug grin on her face. The one she always had.

„T plus ten seconds. Complete roll.“

Despite the announcement, the rocket kept turning. Five degrees past the target, ten. Based on previous flights' bitterly earned experience, past fifteen off the flightpath meant a fatal tumble and catastrophic structural failure.

There we go, then. Should've kept that backup gyro. I hope you're happy, Director.

Yet, Sequine's smug grin remained. Dumb crazy pony.

„T plus fifteen. First segment burnout, second segment ignition.“

With another bright flash, the rocket's exhaust flared, and the vehicle immediately jumped back to its intended heading. The grin became a singularity of smugness.

„T plus twenty. Flight path is nominal, vehicle altitude should be past two thousand strides.“

The rocket quickly shrank in the clear blue sky. Soon, all that remained visible was a glistening speck in the desert sun, and an exhaust plume of black smoke. The sight reminded Lyuka of their previous, smaller, attempts. The ones that exploded.

„T plus twenty five. Mach one.“

A faint thunder could be heard. The plume of black smoke behind the rocket kept expanding rapidly, and now completely obscured the rocket. A few seconds later, it flared again.

„T plus thirty. Second segment burnout.“

The Director mumbled in relief. At least the test wouldn't be a total failure now. Still, no pony took their eyes off the rocket. All wondered: How high would it go?

The roar was just a faint whisper now, the exhaust plume a tiny black circle in the massive azure sky. Lyuka raised one of her eyebrows. Everything was failing so badly, not even the explosion managed to arrive on time.

„T plus fifty, approaching max Q. Mach two! I don't believe this!“

The crowd began cheering, the scattered „You go, girl!“ and „Hay yes!“ barely audible amidst the stampeding hooves. A minute of powered flight would be something unprecedented. Lyuka just

stared at the faint dot.

What do explosions do on their time off anyway? Have a cup of tea? Hurry up, mister!

„Holy horseshoes, sixty seconds! We got it! We finally-“

A distant pop, and the black plume went up in a flash of light.

„Max Q,“ the launch announcer stated emptily. A sudden silence fell upon the crowd, leaving Lyuka's ears ringing.

She dimly stared at the slowly expanding cloud of debris and black smoke, nodding in quiet resignation.

Took you long enough. Almost had me convinced, mister! Show up on schedule the next time, will you?

Shaking the hot sand off her skin, she turned towards the Director.

„Told you. Let's go pack.“

Will did not respond. Noticing something strange, Lyuka shook her head again and blinked repeatedly.

The Director was indeed smiling. Looking around in confusion, she turned around to Redstone. He was also smiling. Looking at the assembled work crews, they all had that same dumb expression on their faces. The vehicle assembly teams, the fuel grain specialists, the ground crews, every last pony apparently mad.

Lyuka scoffed. Did everypony simultaneously suffer a sudden catastrophic brain failure from heatstroke? Explosions were bad, not good!

A lone pony somewhere in the distance began stomping her hooves against the ground. Gradually, more and more ponies joined in, until the lone clap grew to a deafening applause that almost rivalled the original roar of the engine.

The same engine that's now falling towards the ground in a billion tiny pieces. Has everypony gone insane?

She turned back to Will in bewilderment. She looked at that dumb smile again. Their eyes met for a second, and suddenly she knew. She understood.

Looking up towards the sky, Lyuka considered the slowly expanding ball of black smoke. Yes, in the grand scheme of things, it was utterly laughable. Whole months of back-breaking laborious efforts from over a hundred ponies, endless nights spent correcting schematics and rewiring faulty connections, literal rivers of coffee, all spent for a mere sixty seconds of powered flight.

On the other hoof, who cared? Lowering her gaze, Lyuka once again scanned the crowds of cheering and applauding ponies. They had been born peasants. Librarians. A few as pampered

nobles. Ponies that had expected nothing more out of life than a steady supply of food, a nice family, and hopefully enough money to buy a few shiny trinkets. Perhaps a few would go on and become engineers, maybe even building a bridge or a skyscraper that would stand for a hundred years, leaving their mark on history that way.

And yet, here they were. With nothing but their hooves, they had managed to construct a mechanical beast that had broken the speed of sound in twenty five seconds flat, that had soared three times above the limit of the highest flying pegasus, that far exceeded any show of magic. Their little tin can had just single-handedly broken every single flight record in the entire history of Equestria. And it was just a prototype.

Lyuka compared a few numbers, ran a quick mental calculation, then, after double-checking, smiled back at the Director. Their design was perfect. It only broke up because it was *too* good; The fuel mix must have been even better than they had thought. In either case, the real rocket, carrying a payload and extra stages, would be far heavier, not reaching half this speed; Not before it got high enough for the air pressure to drop to near-nothing. It wouldn't break up; It would work.

She nodded to herself. They had a long way to go yet. Clustering, staging, navigation, re-entry, recovery, the list was too long to count. But they've truly made their first step.

~~~~~

In the skies above, Cherry fluttered about in excitement as she watched the cloud of burning metal drop back from the heavens.

She ought to be worrying, screaming helplessly, grimly pondering her own future fate. She might end up in such a cloud, after all. She should be monologuing in angst right now!

And yet she wasn't. Despite some parts of her brain trying to scream at her, Cherry wasn't paying any attention to them. Why should she? Everything had gone wrong for this rocket. The assembly crews were inexperienced, the fuel mix experimental, half the control unit got cut out. And yet it managed to fly faster than the world's best pegasus. By the time it was her turn, Zvezda and Geist and everypony else would have gotten it just right.

*Or maybe this one was just dumb luck.*

*Shut up, brain.*