

Target Error

By Jack English

Chapter One: The Light

Jack English left the Trenton Federal Court and took back roads through the Pine Barrens to his office in Atlantic City. Long stretches of the road were desolate and relatively free of traffic, just the sort of place to open up his Nissan 300ZX and let it breathe. It was more than thirty years old, but he babied that car and it ran as well as the day he bought it.

He was on Route 563, just south of Weekstown, driving through a heavily wooded area when an enormously bright light came from the left. His instinct was to break, but there was no time to react. A painfully loud roar struck him like a baseball bat. An instant later a shockwave lifted his car off the road and hurled it against a stand of spindly pine trees, knocking them flat, then it rolled his car over and over until it landed against a huge old cedar that would not budge. A ball of flames flashed over the area. Then nothing.

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There was no way for Jack English to know what happened or why. A Boeing 737, had just left LaGuardia and was headed to Washington. It was scheduled to pick up a load of passengers headed to Bermuda. It had reached ten thousand feet and

was still climbing. There was a bright blue flash and all the alarms went off.

When the pilot, Gus Zambori, looked out the window, his left engine was a ball of fire. Years of training kicked. It was muscle reflex with little reasoning involved. He hit the fire suppression system that automatically cut off fuel to the engine. He radioed “Mayday, Mayday, Mayday. This is Tranship 23 out of LaGuardia. We’ve had a catastrophic engine failure. Will try to make it to Atlantic City International. Mayday, Mayday, Mayday.” Then he flipped on the intercom to the passenger compartment. Since the plane was dead-heading to Washington, there was only one passenger, his niece, Alexandra Zambori. “Alex! Move to the last seat in the last row and buckle up!”

Alexandra was a twenty-year old NYU film student. She talked her way aboard her Uncle’s flight so she could take stock flight footage as part of a course requirement. She boarded the plane with little more than her knapsack, an ultra-high definition camera, and the expectation she would be back in New York in time for dinner.

Zambori turned to the co-pilot Alan Deering, “Plot a course to AC and make it short. We lost the port engine and the wing is damaged.”

The pilot continued to fly, dumping fuel, and stealing a glance at the left engine when he could. The engine was disintegrating. Parts were getting knocked off by the onrushing air. “I’m cutting air

speed,” he said to the co-pilot. “I don’t want to stress that wing.”

They felt a heavy thud as the rear turbine rotor ripped off the engine and a few seconds later another turbine rotor ripped free. It was like unzipping a zipper. Every part in a high-performance jet engine is balanced with every other part, and the parts don’t just work together; they hold each other in place. When one part goes, the part leaning on that part goes, too. The fire was out, but piece by piece, the engine was falling from the plane.

“Just a little further.” Zambori coaxed the plane. “A couple more miles to Atlantic City and their lovely ten-thousand-foot runway.”

Deering said nothing. It might have been fright. It might have been intense concentration on his job. Whatever it was, the pilot had no time to ask. Several pieces of the engine had ripped through the wing and lifted one of the aluminum sheets. The on-rushing air peeled it back. Then a sickening vibration ran through the plane as a section of wing ripped off.

Zambori slowed the plane to just above stall speed. Seconds counted. If he could only... He looked to his left and saw another aluminum sheet peeling off the wing. He guessed he had lost about twenty five percent of the wing’s surface and with it twenty five percent of the left wing’s lift. Was it possible to fly missing a quarter of the wing? If it was, he was determined to do it. Lift is a function

of the wing's surface area and the rate of airflow over it. To stay in the air, he had to increase the airflow, which meant increasing his speed. He pushed the throttle on the right engine wide open. The airspeed increased. The plane was still losing altitude, but not as fast.

The plane started to roll. The lift from the right wing was tipping the plane onto its left side. He jammed hard on the rudder control and eased back on the throttle trying to keep the plane upright. They crossed the Mullica River barely five hundred feet above the ground. The thrust of the plane's remaining engine forced it into a wide turn.

Gravity was winning over lift. They were going down. The plane came in at just over two hundred miles an hour, shearing tree tops like they were blades of grass clipped by a mower. The fuselage plowed a furrow twenty yards wide and a quarter mile long. The cockpit came to rest a few feet onto Route 539, the road Jack English was unlucky enough to be driving on just when the plane crashed.

The fuel tanks ruptured, and the plane's forward momentum sprayed fuel in the direction of the highway. An instant later fire flashed over the whole area. The fire burned for a day and a half and consumed six hundred acres before it was under control.

Chapter Two: New Hire

Two Years Earlier

Anyone driving through New Jersey would have to conclude ‘Available’ was the biggest company in the state. For one Pomona property, that was about to change. A couple of workmen pulled down the ‘Available’ sign and replaced it with one that was eight feet by eight feet, red, and said simply ‘EC’ in six-foot high white letters.

The building, a two hundred thousand square foot warehouse, sat a hundred feet off a lonely two-lane road. Bulldozers and dump trucks were building an eight-foot high berm between the road and the building. As the berm was put in place, other workmen planted four rows of pine trees on it. Yet other workers erected a pair of parallel fences between the berm and the building. The fences were heavy, wrought iron affairs. There was no barbed wire in sight, but a closer inspection revealed they were capped by a fine network of razor sharp spikes, no doubt something to keep the pigeons away.

Cait O’Malley drove her old Volkswagen past the workmen and parked in front of the main entrance. O’Malley was a tall, athletic redhead, interviewing for her first real job. She stopped a

passing workman, “Do you know where I can find Mr. Clayton?” she asked.

The workman pointed to the far end of the warehouse where a couple of men in hard hats and lab coats were standing.

She walked over and introduced herself to the man who was clearly in charge. She was four inches taller than him. ‘This isn’t going to go well,’ she thought. “Mr. Clayton?” she stooped a little. “I’m -”

“Dr. O’Malley I presume,” Ezra Clayton stuck out his hand and she shook it.

“Yes sir.”

“This is Robert Peck, project leader. You’ll be working for him and this is Tony Wax, corporate security.”

“Gentlemen,” she nodded.

Clayton steered her away from the others. “If I recall, you got your Ph.D. in physics at Drexel. Is that right?” he asked.

“Yes sir.”

“Your cover letter said you were interested in applied plasma research. Is that right?”

“Yes sir.”

“What application did you have in mind?” Clayton asked.

“I was thinking plasma confinement for fusion energy; or perhaps plasmas for electrodynamic space propulsion. Something like that.”

“Very noble. Why aren’t you applying to labs that do that sort of work?”

“There are ten Ph.D.’s for every job opening,” she said.

“Are you telling me you only applied here as a last resort?” Clayton pressed.

“I’m playing the quantum mechanical lottery. The more jobs I apply for, the greater the odds of getting a job,” she said, then thought to herself, “This is not going well at all.”

“I read your paper *Confining and Directing Plasma with Magnetic Lenses*. Very interesting, especially where you discuss particle beam weapons.” Clayton said.

“That was one page out of a forty-page paper.”

“Let me show you a little demo.” Clayton walked over to a device the size of her Volkswagen bristling with wires and tubes wrapped around a stainless-steel cylinder. It was connected to a control panel sitting on a table off to the side. A steel plate, maybe two feet on a side was set up on a stand in the opposite corner of the warehouse. She estimated the distance at two hundred feet. The plate sat in front of a U-shaped pile of sandbags.

Clayton pointed to a technician who turned a key. A rotating amber light came on and a klaxon sounded. A technician counted, “Three, two, one.” Then there was a bright blue flash and the center of the metal plate began to glow.

Clayton walked over to the plate, motioning for O’Malley to follow him. The plate was heavily pitted, but not burned through. Scorch marks

covered the plate and a couple of sandbags behind it were smoldering. “We’re testing against half inch-thick steel.”

“You do weapons research?” O’Malley asked.

“Anti-missile defense,” Clayton said. “We’re trying to build something small enough to put on a ship and with enough range to knock out a surface-to-surface or air-to-surface missile.

Look at this.” He directed O’Malley’s attention to a target plate that was leaning against the sandbags off to one side. “This is the result at one hundred feet.” He bent down and stuck a finger through a one-inch hole in the plate. “Limited range is our problem.”

“How much range do you need?” she asked.

“For ship defense we need five miles.”

“Five miles?”

“Think about it. A surface-to-surface missile can reach speeds of fifteen hundred feet per second. A five-mile range will allow a ship to engage multiple missiles, maybe even take a second shot at an incoming. At any rate, we’ve got a long way to go before we can call this a weapon, defensive or otherwise. So, what do you think? Is this a challenging enough problem for you?” Clayton asked.

“I don’t know about getting involved in weapons research,” O’Malley said.

“Think about it this way. Work with us and you’ll learn a hell of a lot about plasma physics in a very short time, and not just theoretical stuff.

Unlike universities, we build things. If you want to take what you've learned here into fusion research or space propulsion, that's fine. I was thinking about a starting salary of... let's say three hundred thousand a year."

O'Malley's mouth opened, but nothing came out. Three hundred thousand was four times what her fellow Ph.D.'s were getting as professors. "Look, I don't want to take your money under false pretenses. What you've done so far is impressive." She pointed to the steel plate with the hole in it. "But to keep a particle beam coherent over five miles represents a nearly insuperable challenge."

"So, you think it's possible," Clayton said.

"Insuperable challenges are ones that can't be overcome," O'Malley said.

"But you didn't say, definitely," Clayton said.

"Let me put it this way, even if we had unlimited resources..."

"We do - within limits," he said.

"Even if we had unlimited resources the challenges are so formidable, the odds of it working are extremely low," O'Malley said.

"I accept those odds." Clayton cut her off "And you said you were looking for a challenge. I'm prepared to offer you a two-year contract."

She looked down at the ground, trying to balance competing goals: experimental research, yes; weapons research, no; salary, yes. Then she

looked at Clayton and said, “You’ve got yourself a physicist if we can clear one more deal point.”

“What’s that?” Clayton furrowed his brow.

“I want my own parking space.”

Chapter Three: Day One

Cait O’Malley ran an Internet search on Ezra Clayton and found he had a degree in electrical engineering, which meant he probably understood most of the problems she was up against. She also found the EC Pomona facility was just an outpost of a vast industrial empire that stretched across most of the U.S. and Canada. It was a privately held company, so details were hard to come by, but it was clear it had a variety of products. From plasma torches to scientific instruments. There were also hints of a number of defense contracts, the nature of which were not quite clear.

The EC facility in Pomona, New Jersey, was practically invisible. From the road, all that could be seen was an eight-foot-high, pine tree covered berm. There was a gap in the berm near the EC sign. To get to the facility, or even see it, you had to go through the gap and make a hard left which led past parallel wrought iron fences to a guard shack. Visitors were not welcome.

When Cait O’Malley arrived for her first day of work, the berm and security fences were up and a security guard stopped at the gate. He leaned into

the window of her Volkswagen Beetle, “You have a security badge mam?” He asked.

“No. It’s my first day on the job.” She said.

“Name?”

“Katherine O’Malley, Dr. O’Malley.” She corrected herself.

He looked at a clipboard. “Got any ID?”

She wanted to say, *about what?* but the guard seemed humorless. “Driver’s license O.K.?”

“Sure.”

She produced her license. He looked it over and waved her in. She parked in front of the building and walked to the front door. There was a note on it. “Dr. O’Malley, please see me first. Through the doors, first right, forth office on the right.” It was signed “Danny Dunn, Facility Accountant.”

She followed the directions and found herself standing in front of a small office. A note taped to the door said, ‘Daniel Dunn, Facility Accountant.’

She knocked and held up the sign she’d plucked off the front door. “Danny Dunn, I presume.”

“Dr. O’Malley, I presume,” he pointed to a chair. “Sorry about the notes. We’re just getting set up. We used to be in Shamong, you know it?”

“Never heard of it,” she said.

“That’s why we picked it. Unfortunately, we couldn’t get the kind of electrical service we needed, so here we are. We only moved in last week.” He shoved a pile of papers across the desk to her. “The one on top is your employment contract. Mr. Clayton must want you bad.”

“Why do you say that?” O’Malley asked.

“He’s paying you a lot more than anyone else at this facility. Word to the wise: don’t tell anybody what you’re making. That kind of thing only incites jealousy. Under that is the company’s security and ethics policy. Under that is a company handbook. Read ‘em, sign ‘em and then I’ll take you down to meet the rest of the team.”

It took her an hour to read and sign all the paperwork, and Dunn sat quietly waiting for questions.

When she finished reading and signing Dunn said, “Next step, security badge.” He motioned for her to follow.

He took her into a small room with a dark blue background. An X was taped to the floor. “Stand there,” he pointed.

There was a camera on a stand. He had to adjust it for her height. “How tall are you?” He asked.

“Five-eleven. Why?” She asked.

“It’s part of your security profile.” He typed information from her personnel file into a computer, and with a flash, the camera took a digital picture. “Almost there. Please put your index finger on this finger-print reader.”

She did and a minute later her security badge was printed.

“Let me run this through the laminator and we’re done. Make sure to wear this badge whenever you are in the facility and remove and secure it away when you’re not.” Dunn said. “Let’s

meet the team.” Next thing she knew, Dunn was out the door and walking down the hallway.

He knocked on the door to a conference room. “Dr. O’Malley, this is Robert Peck. He’s in charge of the research and everything else at this facility... including me.”

“We’ve met.” Peck smiled.

Peck and the three other people on the team were in their mid-forties or early fifties. They were twenty years into their jobs. This was her first day.

“Dr. O’Malley,” Peck said, “I’d like you to meet Evan Gregory, Janet Grant, and Russell Galen. We’re a small, tight-knit team and you are our first new member since we started.”

Those around the table nodded but said nothing.

“Mr. Clayton asked that we brief you on our progress to date.” Peck handed her a spiral bound briefing book. “This covers everything you’ll need. Your office is just down the hall next to mine. Your name is on the door. If you have any questions, just ask.” Peck turned to leave and the other three team members stood to follow him out.

“Mr. Peck!” O’Malley said. “I have a couple of questions.”

He looked at her, obviously annoyed. “What questions?” The other three team members stood immobile.

“Can we just walk through the briefing book together? It might speed things up. You’ve obviously put a lot of work into this.” She held up the document.

Peck motioned the others back into their seats.

“What? Do you want to go through this book page by page?” Peck asked.

Peck’s tone was condescending and got O’Malley’s Irish up. She had a bad habit of saying exactly what she thought, but this was her first day on the job and she tried to curb herself.

“Is every page important? If every page is important, then let’s go over every page. If any of the pages aren’t important, just tell me and I’ll skip them.”

A look of horror spread across the faces of the other three team members.

Peck sat back down at the head of the table, where he planted his elbows, and clasped his hands in front of his chin. “What do you want to know?”

She glanced at the first few pages of the document, then looked at the index, read a few more pages, and found nothing of value. It was as if the document were a cut-and-paste version of a Wikipedia article on particle beam weapons.

“I don’t see much on plasma dynamics. Is that in another document?” she asked.

“Page forty-two,” Peck snapped, “provides a complete description of the plasma and its magnetic confinement.”

O’Malley turned to page forty-two. “This equation describes the average state of the plasma. It doesn’t describe the eddies and currents induced by magnetic fields. It doesn’t show how plasma flow differs across the diameter of the plasma

chamber. I don't know how you can predict or model anything with these equations."

Evan Gregory, Janet Grant, and Russell Galen turned their heads in unison from looking at O'Malley to looking at Peck.

"Look, I know you've got a fancy degree -"

"A Ph.D.," she corrected him.

"But the four of us," Peck said. "started out with a plasma torch and through trial and error pushed its range to a hundred twenty feet! Our goal is to extend range ten percent a month. No damned equation is going to get us there any faster than we are. So, let's not get ahead of ourselves."

The words going through O'Malley's mind were *three hundred thousand dollars a year, don't get fired!* "Yes sir."

The other three team members glanced at her and then back at Peck.

O'Malley did a quick calculation. An improvement of ten percent per month over the course of her two-year contract would mean a particle beam with a range of around twelve hundred feet. Clayton was asking for five miles. The way they were going, this was a recipe for getting fired.

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