

Buckyball

By E.S. Strout MD

Radon difluoride: a compound of radon, a noble gas. Radon reacts readily with fluorine to form a solid compound but this decomposes on attempted vaporization and its exact composition is uncertain. Calculations suggest that it may have an ionic form. Its usefulness is limited due to the radioactivity of radon. Wikipedia

1.

Approaching the expanding rim of the universe. July 2048:

U.S. Navy Commander Dennis Gorman shook his head to clear the cobwebs of normal space reentry. “Terry?”

“I’m here, Dennis,” Major Teresa Hernandez replied after a gaping yawn.

“What woke us, Dennis?”

Commander Gorman viewed the status readouts of the intergalactic spacecraft Infinity-1’s digital displays. “Radiation alarm. Readings are off scale.”

Hernandez sat up, scrubbed her eyes with two closed fists. “Gamma and x-rays, probably. Good thing we’re shielded.”

She tapped bright green spikes on the monitor with a fingertip. “Wow! Primordial stuff. Newly formed hydrogen and helium atoms, pre-protons like at nanoseconds past the Big Bang singularity. We’re close, Dennis.”

Hernandez produced a foil-wrapped rectangle from a Velcro-sealed flight suit pocket. “Power bar, partner. Bon Appetit.”

He took a bite, made a face. “Yech. You can have the rest.”

“We must have the energy boost, Dennis. Our proximity to the expanding rim singularity will stress our bodies according to Professor Lampley.”

She patted her lips with a tissue. “I just finished mine. Yummy.”

“Yech. Me for a nice rare rib eye steak, fries and a couple of cold Buds to wash it down with when we get back.”

A sudden alarm dilated the small cockpit with a high-pitched trill as stroboscopic red warning lights flashed.

SECURITY ALERT - CONTAINER BREACH IN CARGO SPACE filled the security monitor screen.

Gorman punched up a security camera view.

“Oh crap, Terry. Our passenger is loose.”

2.

One month earlier:

Edwards Air Force Base, California. Space Flight Division Commander’s Office:

U.S. Air Force Lieutenant General Andrew J. Shaw, a thin, wiry black man with graying temples, lit up an illegal cigar with a kitchen match he scratched across his boot heel. He took a drag, then jabbed a key to kill the screeching smoke alarm. He viewed the two personnel records on his desktop 3rd generation MacPro screen, nodding with satisfaction.

“Commander Dennis Gorman. U.S. Marine Corps. Major Teresa Hernandez, astrophysicist. Help yourselves to coffee, Officers.”

Major Hernandez, a short, athletic appearing Colombian with coal black hair and matching eyes, waved an ineffectual hand at the General’s exhaled cloud of carcinogens and sneezed. She dabbed her nose with a Kleenex, took a swallow of coffee.

“Couldn’t this have waited, sir? I was lecturing a cadet class on gravity drive technology. Mandatory course. It’ll be a bitch to reschedule.”

Shaw silenced her with a raised hand. “Confirm your I.D.’s please.”

They peered for a microsecond into the tabletop retinal scanner. I.D. Holograms confirmed their identities.

Commander Dennis Gorman, a 34 year- old, tall Naval Officer with gray-green eyes and light brown hair fashioned in a crew cut asked, “Are we in some kind of trouble, General?”

“Quite the contrary. You, Commander, have a 4.0 flight rating on the new Lynch gravity drive spacecraft. And you, Major, possess dual Ph.D’s in astrophysics and molecular structure analysis. Correct?”

Both nodded.

“You have a new mission.”

3.

Major Hernandez drank more coffee, then tapped restless fingertips on the tabletop. Her dark eyes sparked a bright glint of defiance.

“Why us, sir? Dennis and I were just debriefed on our Zeta-2 Reticuli mission. Captain Avery’s team hasn’t been off Earth in over a year.”

Shaw refilled a NASA-engraved coffee cup from the Mr. Coffee on a shelf behind his desk and took a swallow.

“You are the best I have, Major. Triple hazardous duty pay and guaranteed promotions for this one.”

“I’m skeptical, sir. This better be good.”

He smiled. “As good as it gets, Major Hernandez. Rim of the known universe.”

“I’m thirty-four, General,” Gorman said, a frown darkening his features. “Too old for any more of that twentieth century Star Wars intergalactic fantasy. You need a nineteen year-old flame-tailed Navy Lieutenant Junior Grade fresh out of Lynch drive flight quals.”

Major Hernandez grabbed Gorman’s arm and squeezed. “Please, Dennis? The edge of space. Let’s hear more, okay?”

General Shaw smiled. “Thank you, Major.” He punched a key. A hologram hovered over his conference table. “This is our quandary. You’re looking at a 3-D enhanced electron microscopy photo of our problem.”

“It looks molecular. Like a bunch of soccer balls stacked in a pyramid,” Major Hernandez said.

A nod. “Right on, Major. Dr. Lampley will explain.”

Gorman shrugged. “Don’t recognize the name, sir.”

Major Hernandez held a finger to her lips. “Hush, Dennis. Frances Lampley. She’s a civilian. A biophysicist. Smart lady, got a Ph.D. Head of our laser research section. I’ve read her stuff.”

Shaw pressed an extension. “Dr. Lampley, we’re ready for you.”

4.

Biophysicist Lampley, a tall woman with ash-blond curls framing her face was dressed in blue jacket, slacks, white blouse and low black heels. She wore a concerned expression. She refused the General's offer of coffee and opted for a diet Pepsi, popped the tab and took a swallow.

"Are your people qualified, sir?"

"Best I've got, Fran. Ultra-Q clearance verified."

Hernandez's dark Hispanic eyes shot sparks. "Why should we be interested in something submicroscopic, General Shaw?"

Commander Gorman clapped a hand over her mouth. "Sorry, sir. My partner can be a touch insubordinate."

"It's okay, Commander. Professor Lampley will explain."

She brought up a new hologram. "Ring a bell, Major?"

A sudden grin. "It does now. Carbon-60. It's a heap of buckyballs."

"Excellent, Major."

Dennis groaned. "Say what?"

"It's a form of pure carbon in molecular form, Dennis. In 1986 a bunch of scientists at Rice University in Houston were studying unusual carbon chains identified in red dwarf stars. It took a few years they were able to produce an identical structure they called fullerene, and nicknamed it buckyball."

"Why buckyball?"

"Cause it looks like a microscopic version of Buckminster Fuller's geodesic dome. Correct me if I miss anything, Professor Lampley."

"I'm impressed, Major. Please continue."

"Trust me on this, Dennis. Carbon-60 has been around for sixty some-odd years. Nobody knew what to do with it. Ten years ago they discovered it worked as a superconductor in advanced computers and in lubrication systems that can't use silicon, like in our Lynch drive. More recently there's been medical research involving a nanotubular form of Carbon-60 and radon."

Dr. Lampley's laser pointer reflected a red-gold glint from Hernandez's brass name tag. "I'm impressed, Major. You've been reading."

"See that, Dennis? A gold star," she whispered.

General Shaw described an impatient aerial circle with his cigar. "Update please, Professor."

"Of course, sir, Major Hernandez is correct. We were looking for a way to deliver a radioactive source, radon, directly to a cancerous tumor in small enough amounts to lessen radiation risk to patients. The Carbon-60 nanotubule form appeared to be a way to deliver nanogram dosages of anticancer drugs to individual or groups of tumor cells."

"Then things got really weird." She clicked a computer key. A new hologram image appeared. "Carbon-60 radon difluoride."

"Oh wow," Hernandez gasped. "It's not submicroscopic any longer."

Gorman smiled. "A bigger buckyball?"

"Right on, Commander," Lampley said with a resigned sigh. "The addition of radon difluoride to the Carbon-60 molecule has made a novel difference."

Major Hernandez viewed the new structure with concern. "Difluoride? Radon's not really inert then, is it?"

"That's true," Lampley said. We believed that the compound was stable enough to be passed through carbon-60 nanotubules directly into tumor cells. What we are looking at is a totally unexpected outcome that was not predicted in any of our computer models."

"What's this got to do with us, General?" Commander Gorman asked.

"Show them, Professor."

"Follow me to the lab, Officers."

5.

A three-foot cubic glass module lined with clear boron fiber rested on a Formica topped lab bench. It enclosed a stygian black structure with reflective, subtly shifting angular surfaces. It filled about twenty-five percent of of the container.

"This is Carbon-60-radon difluoride," Dr. Lampley said.

Gorman shrugged. "What's so special about it?"

"Excellent question, Commander Gorman," she said. Dr. Lampley grabbed a handful of wooden pencils from a desk drawer and spread them out on a lab bench top. "Notice anything different, Commander?"

Gorman picked one up, turned it in his fingers. "No lead."

“No graphite, partner,” Major Hernandez said. “It’s another form of pure carbon.”

Dr. Lampley removed her engagement ring and set it next to the pencils. “Now this.”

Hernandez stared, transfixed. “No diamond. Just a silver gem setting.”

“Fluoridated radon has imbued Carbon-60 with an unusual property. It is able to absorb elemental carbon from external sources and replicate itself. The boron fiber blocks it, for now.”

“Is it alive?” Hernandez asked.

“Valid question, Major. Watch closely.”

Dr. Lampley placed a metallic pointer in a transfer port and slid it past the inner boron fiber shield into the enclosure. “This is carbon steel.”

The astronauts gave an involuntary start as the pointer collapsed into grayish-brown dust.

“What happened, Prof?” Major Hernandez asked.

“That’s pure elemental iron. The carbon’s been assimilated.”

“You said external sources. Please explain,” Hernandez said.

“Let me demonstrate, Major. I’m opening a three-millimeter boron fiber partition.” She pressed a remote stud.

“Commander Gorman, would you please step closer.” Gorman walked to the enclosure, then backed away at a sudden tug on his uniform shirt. Major Hernandez grabbed his arm and pulled him back as Lampley closed the shield.

“What the hell just happened?” He asked.”

“An external source,” Dr. Lampley said.

Only the brass clip of the Commander’s I.D. badge remained. The plastic lamination and paper components drifted to the floor in flakes of brown debris. “All composed of organic carbon compounds,” Dr. Lampley said.

Gorman mopped a film of perspiration from his forehead with a sleeve. “It could have been me.”

“Dennis is right, Prof. We’re both made partly of carbon.”

“Correct, Major. Most of human biologics consist of carbon compounds,” Dr. Lampley said. “For some reason the enhanced Carbon-60 doesn’t affect living tissue. It ignored two lab rats placed in the enclosure.”

“This thing started off microscopic. How come it’s so big now?” Commander Gorman asked.

“Than answer is complex, Commander. You need to see this video.”

Dr. Lampley clicked her remote. A hologram appeared, hovering in a space over a lab bench. “This is a chip recorded two hours ago when we tried to destroy the anomaly.”

A beam of intense pulsating lavender light shot from a small aperture in the ceiling and impacted the enclosure.

“Pure neutron beam from a concentrated source. It’s military hardware. It can atomize enemy ships and aircraft in seconds but won’t affect glass or boron fiber,” Dr. Lampley explained. “As you can see the anomaly is still intact.”

There was a gasp from Major Hernandez. “Wow. At least ten percent larger now.”

“Keep watching, Major, Commander.”

A second neutron blast obscured the enclosure in purple brilliance. “This was double strength. As you can see, equally ineffective.”

“Now look.” Lampley clicked the remote and radiation readings popped to the screen. “Background only. All radiation absorbed and neutralized by the anomaly. And it’s still growing.”

“Shoulda quit while you were ahead, Prof,” Commander Gorman said.

“We were never ahead, Officers.”

6.

Lampley handed General Shaw a computer printout. “From our briefing, sir. Carbon-60 radon difluoride has eaten two bolts of pure military strength neutron radiation. Its plus-delta growth increment is the greatest I’ve ever seen. It fills half of the containment and now it’s beginning to erode the boron fiber shield.”

Shaw ground out the cigar butt in his coffee cup. “What do you think, Commander? Major?”

“Our top military weapon just enhances it,” Major Hernandez said. “I think it’s alive.”

“Rational concern,” Professor Lampley admitted. “We have very little time, General. It continues to expand and will seek additional carbon compounds when it breaches the containment.”

“How long, Fran?”

“Unknown, but soon.”

“This is why you’re here, officers,” General Shaw said.

“What can we do, sir?” Commander Gorman asked in a subdued voice.

“Show them, Prof.”

She tapped computer keys. A chaotic, sinuous multicolored light display hovered over the conference table. “The rim of the universe.”

“Nice simulation,” Major Hernandez said.

“You wish. This is a tachyon transmission from an unmanned probe powered by the Lynch gravity drive. Expanding periphery of the original Big Bang singularity. Primordial hydrogen atoms and subatomic particles.”

“This mission will accomplish what?” Major Hernandez asked.

“Data from the probe suggests that antimatter components beyond the event horizon will destroy matter injected from our universe,” Dr. Lampley explained.

“So Dennis and I are to launch it through the event horizon and turn it into antimatter toast?”

Lampley gave a reluctant nod. “Be aware, officers. Our enhanced buckyball may have potential we have yet to discover.”

Commander Gorman rose to his feet. “So give us the word, sir.”

“The word is given, Commander. God go with you both.” He gave them both a vigorous salute.

“I think you’re getting off easy with triple hazardous duty, General Shaw,” Major Hernandez grumbled.

7.

At the expanding rim of the universe:

“Damn. It’s out of the cargo bay and unconfined. It will be impossible to launch it now, Terry.”

Major Hernandez gave a cynical grin. “There goes triple hazardous duty pay and our promotions. Well, what the hell, we did volunteer. I can see only one choice left, Dennis. Let’s do it before the buckyball starts chewing on us.”

Hernandez hugged her partner in a fierce embrace. “Send Professor Lampley a tachyon encrypted warning. Tell her it’s alive.”

Commander Gorman punched keys. “No response. Transmission is blocked. Interference from the anomaly.”

“Let’s see them block this.” Commander Gorman tweaked the helm control. Infinity-1 and its occupants vanished in a cloud of silvery vapor as it accelerated through the event horizon of the rim singularity into the antimatter universe.

8.

“Are we clear of the rim, Dennis?”

“Yes, Terry.”

“The primitive radiation. Any effect?”

“None.”

“The rats were inferior lifeforms. Not suitable for assimilation. Ignoring them worked to our advantage.”

“Do we have subatomic particle deflection now?”

“Yes, Dennis. An undiscovered capability, as Dr. Lampley so aptly put it. Immunity to antimatter disruption.”

“Why was blocking of the tachyon transmission necessary, Terry?”

“It assures the element of surprise, Dennis, and unrestricted access to Earth’s vast carbon supplies.”

“Won’t they suspect?”

“The infusion was total. This is what my Major Hernandez host meant by alive. We’re heroes. We saved planet Earth.”

“My Commander Gorman receptacle has Earth coordinates set and programmed.”

“Execute return program, Dennis.”

The End