ML.92.We Snooped on Soviet Missile Tests – By Robert L. Brown

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When I stepped off the Boeing KC-135 tanker that had brought me to my new duty station in 1968, I felt as though I had been transported back in time. I stood on a heavily patched aircraft parking ramp in front of a large, weather-beaten wooden hangar, marked with a sign that read DET. 1 SHEMYA."

Captain Robert Brown

Scattered around the landscape were the wrecks of a few battered military trucks and other vehicles and old concrete gun emplacements some with rusted barrels still pointing out to sea. The decaying fuselage of an old bomber lay just off the runway where we had taxied in to the hangar turnoff. A crust of ice and snow, which I was to learn never went away, covered the ramp, and a chilly wind of close to 30 mph was blowing steadily across the tree-less tundra and rock that made up this small Aleutian island - my home for the next year. Everything was either stark white or some shade of black, as if the whole thing were a scene from an old newsreel.

At only about three or four miles long and a few miles wide, Shemya doesn't show up in the average atlas. Located near the end of the Aleutian chain east of the larger island of Attu, its value lay in its proximity to Soviet missile testing ranges.

I was an electronic warfare officer (EWO) who had cut my teeth on B-52G bombers at Warner Robbins Air Force Base in Georgia, where life consisted of alert duty, long training flights, and endless preparation for either nuclear war or inspections both about equally dreaded. On the B-52, the EVO's job was to defend the bomber from fighters and ground-to-air missiles by jamming tracking radars, dispensing chaff and flares, and, when these efforts failed, advising the pilots that they needed to resort to violent maneuvers.

Until the B-52s lumbered into battle over Hanoi during the Vietnam War, electronic countermeasures had not really been tested in combat. Uncertainty about whether they would work, coupled with the mystery and weirdness that most people associated with electronic countermeasures at the time, made the EWO something of an oddball in the bomber world. The fact that EWO was pronounced "e-woe" didn't help.

But in the RC-135s at Shemya, electronic warfare officers were called Ravens and were central to the mission. They located, analyzed, and recorded Soviet radar signals- -real time, real world. They gathered data on the strategic missile tests the Soviets launched from sites in Plesetsk, Tyuratum, and Baikonur toward the vast Kamchatka test range. I didn't know much about the RC-135 Ravens when the squadron operations officer called and asked if I was interested in flying on a different aircraft. He couldn't tell me much about the assignment, as everything was classified, but I was bored with continuous alert duty on the B-52s and more than a little frustrated with my second-class standing in a pilot-dominated bomber culture. "What the hell." I answered. Things moved fast after that.

I was assigned to the 24th Strategic Reconnaissance Squadron of the Sixth Strategic Reconnaissance Wing, 1ocated at Eielson Air Force Base in Alaska. Arriving at the beginning of winter, I discovered a place where the sun – what there was of it – rose grudgingly a few hours

before midday and set a short time later, where moose strolled into back yards, and the landscape went on forever.

Most of us were married, and we lived on base in ghetto like apartment clusters. Living in Alaska made you feel isolated, a sensation made worse by our being cut off from our extended families. Air crews on normal tours of duty spent one week at Eielson and the next at Shemya-in short, we would spend six months out of the year at the austere environs of Detachment 1. Wives knew nothing about their husbands' work.

The heritage of our missions extended back to 1946, when a modified B-17G flew the first flight to gather electronic data on the Soviets. By the end of the cold war, U.S. Air Force and Navy crews would have flown 20,000 clandestine missions near Soviet airspace, gathering all manner of electronic intelligence (ELINT) and signals intelligence (SIGINT).

In the late 1960s, there were about a dozen RC-135 airframes in the Air Force fleet, mostly one of a-kind types configured for specific areas and intelligence collection missions, and often with their own code names. The RC typically had heavy antenna pods in the cheek fairing, forward of the wings. It also had a long radome, which inspired the RC's nickname, Hog Nose.

Shemya crews operated two airframes: the RC-135E "Lisa Ann/Rivet Amber" and the RC-135S "Rivet Ball." Rivet Amber was fitted with a huge side-looking radar in the forward fuselage, behind a fiberglass radome that ran from the cockpit to the wing root. It was also unique in having a "fifth' engine- a Lycoming T-55-L5 turbine hanging under the left wing solely to furnish power for the radar, which emitted a beam that could detect incoming intercontinental missiles above the atmosphere and hundreds of miles away. The radar was so powerful it endangered anything in its path.

Our crew flew the Rivet Ball – tail number 1491 – which had the hog nose and antenna stubs. Most of our sensing equipment was installed on the right side of the aircraft, which featured three distinctive di-pole "spear" antennas on pylons, as well as a row of 10 large round windows. The first five were quartz, and the rest optical glass, for the various cameras we carried. Also on the right side, located between the words ‘Air’ and ‘Force’ was a black square, a special window for a gyro-stabilized camera with a plate glass negative that shot the stars during target tracking. On the top and center of the fuselage, a recycled B-29 gunner's plexiglass dome served as the manual tracker's position. The fuselage around the base of the dome was painted black to cut glare, and the top of the right wing was also painted black, along with the inboard sides of the engine 3 and 4 nacelles. Even with the anti-glare paint, the dome was hot and cramped. Still, with its panoramic view, it was the best seat in the house, and this became my position. The Rivet Ball had two Raven teams, each consisting of seven or eight officers who collected electronic and telemetry data and two noncommissioned photo technicians, who loaded and down- loaded the cameras and packaged the collected data, which was shipped to Wright-Patterson Air Force Base in Ohio for analysis. An enlisted electronic warfare technician also helped the team, taking care of the signal and telemetry collection equipment, downloading the recorders, and helping prepare the data. There were also Air Force Security Service personnel – Russian linguists – who flew with the team to collect voice communications and listen to Soviet radio chatter. Because we relied on each other so heavily, the members of each team were fiercely loyal to one another. The two teams were friendly but highly competitive.

The Ravens on my team – Team 2 – also had personal call signs, bestowed by team members based on personalities and appearances. Our tactical coordinator (TC) was Captain Robert 'Granny' Armentrour, a careful and deliberate professional who coordinated the mission in the air and was the team's link with the pilots and navigators. Working closely with the TC was the signal monitor, Captain "King" Hawes, who had the best technical mind on the team and was also sometimes called 'Tinker,' because he was constantly taking things apart or thinking up ways to modify the equipment. Raven 1 was Captain Al 'Lurch' Hansen, a guy over six feet tall who looked even bigger in his oversized parka, military mukluk boots, and fur cap. Raven 2 was Captain Joe "Preacher" Hall, a gentle good ol' boy from Louisiana who took his job and his religion seriously. Captain Ed 'Mother' Wakeman was Raven 3, a former non-commissioned officer who had come up through the ranks and had been in RB-47Hs since God was a copilot. Mother was a Connecticut Yankee to the bone and took care of most of the housekeeping chores, from paperwork to refueling the crew truck to making the coffee every morning in the crew lounge. Raven 4 was Captain Russell 'Gort' Howard, a former B-52 EW0 who had been in my squadron in Georgia. Gort was a happy-go-lucky type with a good sense of humor. Captain Brad "Troll" Perry initially served as one of the team's manual trackers (MT), then switched to backup signal monitor after the solar radiation began to affect his eyes. The Troll got his name from his habit of holing up in his room between missions to work on his graduate degree. I was the primary manual tracker, and despite my genteel southern roots, I ended up with the handle "Viper," a title bestowed by Mother, who claimed that I tended to be a bit of a wiseguy – which of course was the sort of total exaggeration you would expect from a damn Yankee.

Rivet Ball Team 2, Shemya, 1968

Shemya was not as cold as Eielson, but the weather was consistently bad, and we routinely took off and landed in minimum safe conditions with cross-winds, blowing snow, and limited visibility. The hangar door had a sign saying 'Do Not Open When Winds Are Above 50 mph.' Takeoffs were often made between wind gusts that exceeded the maximum allowed by the book; pilots who flew in and out of here were rated 'Shemya-qualified,' almost like carrier pilots.

There was only one operational runway at Shemya, which was around 10,000 feet long, but there were no overruns. At one end was a drop-off of about 40 feet into the tundra. This was the good end. At the other, a steep cliff plunged 50 to 60 feet into the rocks and surf. I would come to a unique understanding of the hazards of this treacherous and icy concrete strip when Rivet Ball was eventually destroyed in a landing accident. Luckily, all of us survived.

The ICBM flight zone is about 280 miles from Shemya. Since the Soviets weren't in the habit of coordinating their tests with us, we learned of the possibility of a launch only hours before it was to take place, from an alert system so classified that the details were above even our security clearances.

When we got the word that a shoot was developing, the klaxons would blow, and we scrambled to get the airplane out of the hangar and in the air as fast as possible. Engine runups and

equipment checkouts were quick and dirty. There was a narrow window of opportunity to get in position near Kamchatka to intercept the reentry vehicle, called the RV, as it plunged through

the atmosphere into the range. Thanks to the air and ground teams, we rarely missed a shot. We did, however, tend to be a somewhat motley looking bunch at times. While we normally wore regular-issue flight suits, because of the secret nature of our work, these were stripped of any rank or unit patches, and with a scramble coming at any time, at least a few guys usually ended up flying in whatever they happened to be wearing. Jeans and sweat shirts were common, with headgear ranging from regulation caps to knit watch caps and Russian-style fur-lined affairs with ear flaps.

It took a little over an hour to get from Shemya to the waters off Kamchatka, where, depending on how good our alert warning had been or how bad the weather was, we would usually spend anywhere from a few minutes to an hour maneuvering to be lined up properly at the north end of the area just before the RV appeared. As the RV entered the range, we'd turn south and run parallel to the coastline. If we were late, we missed part or all of the event. If we were early. we ran out of tracking space and lost the target behind us.

Each Raven monitored and recorded missile telemetry. the data link channels of the incoming RV, or the signals from the ground-tracking radars used by the Soviets to monitor the test firing. But ultimately, all the electronics and calculations boiled down to the eyeballs of the manual tracker, who was akin to the lookout in an old whaling ship's crow's nest. He aimed the row of specialized cameras mounted on the floor and pointing out the windows. but before anything got photographed or recorded, he had to spot the RV as it hit the atmosphere and began to heat up. When he did, he called “Gaslight!” alerting the team that we had a target and to start data collection. At this point. things got very busy. The Ravens were recording everything that was going on. the pilots were trying to keep the aircraft as steady as possible, the navigators were keeping the aircraft on track, and the tactical coordinator was sweating out the time left before we run out of track. The manual tracker Wu trying to keep the RV centered in his crosshairs.

Detecting the RV in time to alert everyone was critical, but the real trick was to track the actual warhead and not be fooled by all the burning fuel tanks and shields that the missile shed as it started to burn its way into the atmosphere. The MT had only a few seconds to locate, lock onto, and track the warhead, which was smaller, faster, and dimmer than the debris. It was easy to get behind the warhead and end up with a lot of useless film and data. I got bit at least once, but you learn fast on the job, and I usually got enough data to keep the intel and technical people happy. Being, a southern boy who had grown up hunting fast flying dove and quail also helped, but I was

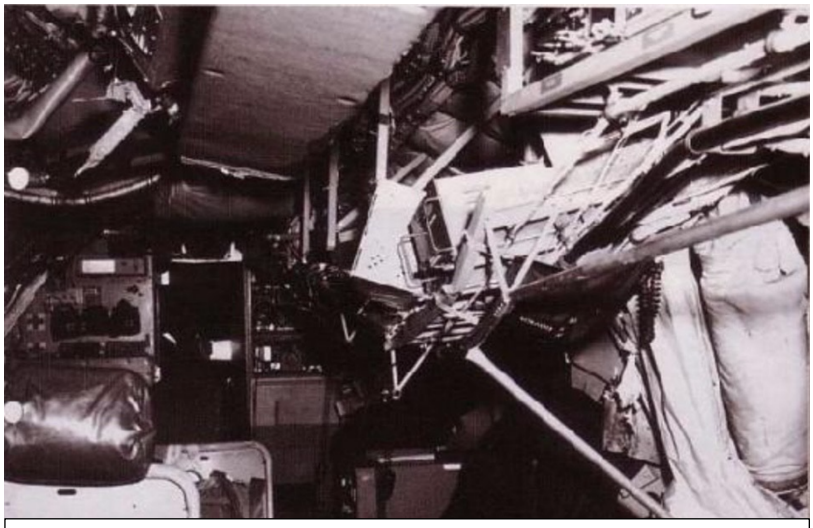
never completely happy with the Rivet Ball's aiming and tracking system, which was basically a modified B-29 machine gunner's position with a simple optical sight and s set of tracking handles.

This setup was fine for firing .50-caliber bullets at a fighter half a mile away, but left something to be desired when it came to trying to precisely track a missile nose cone that was only a pinpoint of light. King (Tinker) Hawes experimented with a rifle scope he had bought himself and mounted on one of the window cameras, and the Troll actually used this setup on one mission with good results. But when I took over the MT position we still had the old system, and this is what I used during my time on Rivet Ball.

I discovered that the manual tracker's biggest problem was the sun, which heated up the plexiglass-domed cockpit like a rotisserie oven. The sun was usually shining almost directly into one or both eyes. Sunglasses didn't help; they made it harder to spot the RV warheads, so l resorted to sticking a square of paper about the size of a playing card behind the left lens of my glasses to block out some of the sun's glare. It was a half-assed solution.

By the end of a typical mission, a manual tracker would be seeing spots; by the end of a tour of duty he could have permanent retina damage. We complained to the Air Force, but ultimately – as we often did at Shemya – we improvised a solution.

Not surprisingly, it was King Hawes who figured one out. He found a spare plexiglass dome somewhere in the hangar and dragged it into my room. along with several rolls of heavy-grade aluminum foil liberated from the mess hall kitchen. We put the dome, which was about three feet in diameter, up-side down on my bed and laid strips of foil inside until we had built up 3 metal shell. We then carefully removed the shell from the plexiglass and carried it to the. aircraft, which was parked in the hangar just outside our rooms. After careful folding. maneuvering, and some verbal assistance, we finally got the shell in. It fit pretty well, except of course that I couldn't see out. King then cut out a section overlooking the right wing, and I had my sighting window. The result was crude and would have given the real engineers fits, but the shell worked, reflecting the solar-rays and blocking the glare. The only drawback was that it also blocked the nice all-around view I normally enjoyed on takeoff and landing. I wasn't supposed to be in the dome during takeoffs or landings because the position wasn't reinforced to withstand an accident, but when you're young you think you're bulletproof. In any case, I had to give up the fun of watching everything from on top of the airplane and take my seat below for takeoffs and landings, as I should have been doing all along. This probably saved my life.



Rivet Ball Interior after the crash

On January 13, 1969, we slid off Shemya's icy runway, sailed over the 40-foot drop, and slammed into the downslope. Equipment racks tore loose

from the walls, black boxes were ripped out of the consoles; the noise was deafening. The impact broke the airplane's back, tearing open the fuselage aft of the wing. I'm glad I wasn't in the dome.

A more persistent danger than that of icy runways came from our target. The Soviets knew we were spying on their tests, of course, and monitored our flights closely. They would often have fighters in the area, and we knew that they would have loved an excuse to nail an RC-135. An RC is no match for a MiG, and since they had downed an RB-47H in 1960, we weren't about to give the Soviets the opportunity to set up an intercept and shoot us down. Between 1946 and 1991, the Soviets destroyed 18 types of U.S. reconnaissance aircraft; about 250 airmen were killed in shootdowns, lost their lives in accidents, or were captured (see "Beyond the Iron Curtain," Aug./Sep. 1994). The perils for reconnaissance crews didn't stop after the cold war; earlier this year, four North Korean fighters intercepted an RC-135S over the Sea of Japan. Pentagon officials initially said that at least one of the jets locked its missile radar on the RC before the fighters dispersed but that statement has since been retracted.

The risks aside, everyone knew the mission was important and worth whatever it took to collect the data. In October 1968, we hit the jackpot. We had taken up our position off Kamchatka, and all indications were that an event was developing. I spotted the incoming missile warhead, called the signal, and centered the crosshairs just ahead of the burning tankage. Suddenly I realized that there wasn't one warhead — it was a multiple reentry vehicle, or MRV (pronounced 'merv'). U.S. intelligence agencies, including the CIA, had suspected the Soviets were developing a multiple-warhead capability, but we had not been able to prove it, and of course they denied it. If the Soviets had developed MRV capability, that would be an ominous turn, one that would affect ongoing nuclear arms talks. We had found the holy grail of the RC-135S mission — but when it happened, I damn near blew it. Nobody had explained what I was supposed to put the crosshairs on, and I wobbled them all over the place. Somehow, I managed to get enough data to confirm that we had spotted a MRV. The other Raven team was now anxious to pick up the next MRV shot and share the glory. But as it turned out, Team 2 was in the air for the second MRV test, conducted on December 18.

We knew it was an important discovery, but from our chilly Alaskan outpost, we didn't realize the magnitude. Sometime later, we were called into a classified briefing room and shown a film of the United States representative at the United Nations confronting the Soviet representative with proof that the U.S.S.R. had developed and tested multiple warheads for its missiles.

In his hand he had the photos and data from our missions. Team 2 had hit the mark.