

[Home](#)[Welcome](#)[Who We Are](#)[Where We Are](#)[Doing Business With White Sands](#)[Capabilities](#)[Public Affairs](#)[Visitors](#)[Workforce](#)[Employment](#)[Contact Us](#)[Links](#)



The Athena That Got Away

by Jim Eckles

On July 11, 1970, Athena missile number 122 was launched from Green River, Utah, in the middle of the night. Like the previous firings, which the Air Force began in 1964, this Athena was programmed to impact on White Sands Missile Range. Instead project and range personnel watched helplessly as it rocketed south heading deep into Mexico.

In fact, the missile went so far south, radars lost the vehicle as it descended over the horizon and, at first, officials were not sure where it struck.

[Photo of an Athena launch from Green River \(big file\)](#) (or [go to smaller file](#))

This international incident was made worse when it was soon revealed that the Athena nosecone or "reentry vehicle" carried two small containers of Cobalt 57, a radioactive element. To top it off, the Mexican government quickly reminded the United States about the Pershing missile fired from Blanding, Utah, in Sept. 1967 that crashed just across the border in Mexico south of Van Horn, Texas.

One can only imagine the telephone lines glowing red hot as calls crisscrossed the country in the wee hours of Saturday (Where is it? Who calls the Mexican government? Do we call the president? Do we have to tell anyone there is a radiological source onboard?). While top officials dealt with notification, contractor and government managers called on key personnel and everyone scrambled for their emergency response plans. It was looking like it might be long, hot summer.

At 50 feet tall and 16,000 pounds, the Athena was assembled as a subscale model or simulator for an intercontinental ballistic missile. The Air Force used it to study reentry characteristics of warheads and other space vehicles. Going this route saved the Air Force money and allowed them to collect high-quality data from the land-based instrumentation at White Sands. Full-scale testing was done at sea.

[Photo of Athena on its launch rail \(or go to smaller file\)](#)

The missile's four stages burned solid propellant. The first two stages were used to push the Athena to an altitude of about 200 miles. As the vehicle coasted, computers reoriented the final two stages so they were pointing down and toward White Sands. Once this was accomplished, stages three and four fired in sequence to shoot the reentry vehicle back through the atmosphere at speeds of 15,250 miles per hour – that's 4.25 miles per second.

The Green River launch complex was built to accommodate the Athena program with the first launch in 1964 and the last in 1973. A total of 141 Athena missiles were fired. Green River was also used for Pershing launches.

[Photo of a Pershing launch \(or go to smaller file\)](#)

Other land acquired for the testing included booster drop areas south of Moab, Utah and near Datil, N.M. In addition, the two ABRES (Advanced Ballistic Re-Entry System) call-up areas on the west side of White Sands were established for the incoming missiles.

Athena #122 was scheduled to launch at 2:40 a.m. according to news releases sent out by White Sands prior to the test. I was not able to find any record of the actual launch time. Area residents around Green River and Moab would often stay up late or get up

early to watch the Athena and Pershing fireworks provided by White Sands.

There also were fireworks on the receiving end. According to Pat Quinlan, who was in Range Control at Bldg. 300 watching telemetry and radar data, the first part of the flight was textbook. Data from the telemetry and radar tracking systems clearly showed where the missile was during the first couple of minutes.

Quinlan explained that during reentry White Sands always lost contact with the Athenas. He said it was the same phenomena the space shuttle experiences when it reenters the atmosphere. There is a communications blackout caused by the plasma surrounding the vehicle which is generated by the intense heat from friction with the air.

Quinlan said he and others usually went out on the north fire escapes of the building to look for the telltale glow of the Athena coming into the atmosphere over White Sands. He said it always showed to the north about 45 degrees above the horizon.

On July 11, 1970, it was different. "Suddenly, the glow appeared almost straight overhead and the reentry streak trailed to the south," Quinlan said. He said it wasn't long before the phones started ringing.

[Photo of Pat Quinlan \(or go to smaller file\)](#)

Although the missile appeared in the wrong spot in the sky, Quinlan pointed out that the range systems did exactly what they were supposed to do. As the Athena emerged from the plasma cloud, telemetry signals started arriving. The data was processed and used to aim the narrow band radars so they could track the missile until it disappeared over the horizon. This information was used afterwards to forecast where the Athena should have impacted.

As officials wrestled with the unknowns the Athena dealt them, there was a more immediate problem up on the western boundary of the range. Dale Green, who was the Uprange Division Chief at Stallion, said he received a call early Saturday morning telling him to get a fire crew and equipment out to the Engel Gate. The gate is on the missile range's western boundary in the San Andres Mountains. The road out the gate leads to Truth or Consequences. Apparently, burning fuel falling from the Athena started a grass and brush fire near the gate.

Green said they couldn't accomplish much on Saturday because of the rough terrain. They went back on Sunday with a bulldozer to cut fire lines. However, the clutch went out on a steep incline and they ended up letting the fire burn itself out by Tuesday.

Then Green received orders to travel to the main post on Tuesday for a noon meeting with the commanding general. He was told he would be going to Mexico to retrieve the errant Athena when it was found. Planning started immediately to figure out what equipment and people would be needed.

Of course, the big question was, "Where is it?" There was some speculation that the nosecone could have burned up on reentry and never hit the ground. For the first day or so, the newspaper stories reported officials saying it probably came down in a "remote mountainous area 150 miles south of Juarez."

Carlos Bustamante, who was working as the project engineer for SRAM (short range attack missile) in the National Range, got a call in the middle of the night from Austin Vick telling him to pack his bags, he was going to Mexico. Vick was with the Plans and Operations Office at the time and knew about Bustamante's background.

It turns out Bustamante was uniquely qualified to be on the team that went to search for the Athena. Earlier Bustamante had worked as a project engineer for Athena and was involved in the selection of Green River as the launch site. So he knew the Athena program, he knew how White Sands worked and he was fluent in Spanish.

[Photo of Carlos Bustamante \(or go to smaller file\)](#)

Bustamante joined a small team led by Lt. Col. Lowell (Buzz) Knight. The team's instructions were that they were on their own and Bustamante was the only one authorized to speak to the Mexican officials about the program and their efforts.

By the time the group left on July 16, the data reduction folks deduced that the Athena was 450 miles into Mexico in a south-southeast direction in the area of the boundary between Durango and Chihuahua. The team flew down in two small contracted airplanes while others drove two vehicles down for their use. They established a base in Torreon, the largest town in the area. They expected to be done in four days.

The team made contact with their Mexican counterparts that included some engineers and two army officers. After two days of answering questions posed by the officers nothing happened.

Back in the States reporters were looking for answers. One news service correspondent asked Jim Lovelady in the White Sands Public Affairs Office when the Athena would be found. Lovelady told the correspondent it might take days, weeks or months. This was turned into a quote saying White Sands expected to find the Athena within 24 hours.

Of course the folks in Washington were not amused and they put out the order that only they would answer questions about the incident.

In Mexico, Bustamante quickly realized the two army officers spoke English. After those first futile days, he invited them for drinks in the bar. He bought a few rounds, then told them he knew they spoke English and he was tired of translating.

It worked. They admitted they had trained in the United States at the War College and had done some liaison work with NASA. After that, the two sides got down to business. Another plus was that Knight could be directly involved since the talks would be in English.

In the meantime the Athena impact point was further refined. Air Force specialists said the nosecone would be in an area 1.5 miles long and only half a mile wide. The only problem was no one could put that ellipse on a particular spot on the ground because there were no landmarks to go by. Bustamante said it was near a small town called Ceballos about 100 miles from Torreon.

The terrain is open desert and mountains with very few people. The team flew aerial searches day after day. They took reports from anyone in the area who might have seen or heard something. They landed on back roads and pastures to interview ranchers.

According to Bustamante the aircraft got quite a workout. They were flown by former Navy carrier pilots, whose skills were perfect for flying over empty desert. He said if anyone on board saw something in the desert below, the pilots had a knack for making quick tight turns and returning them to the exact spot for a second look.

One day the second plane was coming in late, after dark. Normally this wouldn't be a problem but the one-man airport had closed down at sunset and turned off the runway lights.

This is one time Bustamante played his wildcard. The team wasn't quite on its own.

Bustamante and Knight knew that the Mexican government had assigned one of their secret service agents to assist the Americans. All they had was a phone number and the guy's name.

On this evening Bustamante called the agent and explained the situation. The Mexican rep told them to just have the plane circle, the lights would be on in 10 minutes. They were.

Another time one of the team members became seriously ill. Bustamante called the agent who sent a doctor. When the doctor said the man needed to get back to medical attention in the United States immediately, the agent quickly made the arrangements for one of the search planes to fly unhampered to El Paso.

By the first of August, after days of searching, they still had not found the nosecone. On Aug. 2 the nosecone was finally found by a specially equipped aircraft from the Atomic Energy Commission operated by E.G.G. Inc. The plane was equipped with a scintillometer and a spectrum analyzer calibrated for cobalt 57.

Bustamante said his team then followed directions radioed from the plane to get to the general area. For the last dash cross-country, they followed a trail of flour sacks dropped from the plane to the impact site. Bustamante has a photograph of himself standing on a dune with a shovel overhead indicating to the aircraft crew that they

were at the site.

What the WSMR team found was a small crater area with just a few pieces of metal and some contaminated sand.

The nosecone carried two small canisters containing pellets of cobalt 57. This radioactive material was used to measure the ablative material on the outside of nosecone as it burned off and protected the vehicle during reentry.

Bustamante's team and the Mexican scientific team measured the radiation levels all around the site and found it to be about six tenths of a millirem per hour -- just about what the levels are at Trinity Site today.

This is a very low level radiation. There are many places on earth naturally more radioactive. To put it in perspective, the American Nuclear Society estimates Americans receive between 26 and 96 millirems every year just from the sun -- depending on elevation.

The night they found the Athena the whole team, including the Mexican escorts, celebrated with a banquet in Torreon. Bustamante said White Sands reluctantly paid the \$700 bill for the evening.

After conferring with the two Mexican colonels, Bustamante said he thought the whole thing was over. They found the debris from the nosecone and the radiological source (they never did find the third or fourth stages of the Athena). The radiation levels were very low and very isolated. Both parties thought they would fill in the hole and that would be it.

However, a few days later officials and radiological teams from higher levels of both governments showed up at the site and the situation changed. They confirmed the initial readings but after lengthy negotiations the Mexican government requested the site be reduced to a radiation level of one half a millirem or less.

What followed was several more weeks of negotiations between the two governments on how to accomplish the recovery. The basic premise was that personnel from the U.S. would travel to Mexico to remove most of the contaminated dirt and bury the rest.

Every detail was talked about and planned. There were restrictions. For instance, according to Dale Green, the team had to travel by train and all military markings had to be removed from the railcars and the earthmoving equipment sent down.

The train consisted of three Pullman-type cars to house the personnel, one dining car, three box cars, nine flat cars for heavy equipment, two water tankers and a fuel tanker. It left Orogrande late on Sept. 23 and was timed to clear customs in Juarez just after midnight on Sept. 24.

The recovery operation was dubbed "Operation Sand Patch" and was commanded by Col. Thomas Kearns.

The train arrived at its destination on a siding at Carrillo, Mexico, about 4 p.m. on Sept. 24th. From Carrillo the team would travel just over 20 miles to get to the crash site. At the time Carrillo was a tiny community of about 100 souls with very few modern conveniences. The only electrical power came from a generator used by a salt company outside of town.

The men ate breakfast and dinner in the train's dining car and had lunch delivered to the site. They slept on the train. Green said the food was good and sleeping quarters were air-conditioned.

[Photo of Dale Green \(or go to smaller file\)](#)

The next day team members unloaded equipment and started a road to the site from the train. Then the heavens opened up with rain falling off and on for days.

The bad weather caused a huge delay. Team members spent a great deal of time just getting vehicles out of the mud each day.

Eventually, after several days, it quit raining and they were able to move back and

forth to the site. The loading of barrels with contaminated soil was completed on Oct. 1, late in the afternoon. Sixty drums of soil were prepared for shipping plus three 19 gallon drums containing anti-contamination clothing, rubber boots and gloves.

Photo of barrels of sand being sealed
Photo of barrels being scrubbed before loading
Photo of worker being checked

The news reports of how much soil was being removed were greatly exaggerated. One newspaper stated that 200,000 tons of dirt would be shipped out.

Some very low-level radioactive soil was buried in two trenches but basically the contamination was no deeper than a few inches across the site.

Once the barrels were back at the train it took a few days to clean and load everything. According to Green, before the train left, the team did a number of things for the Carrillo community. They bladed streets, reinforced the check dam above the town and worked on the water system.

Also, they fixed the single television set in town and got it working with power from the salt company generator. Green said many of the residents had never seen a TV broadcast before. It probably explains why the locals were not disappointed when all they go on the set were ghostly images from a distant city.

The train left Carrillo just after midnight on Oct. 5. It hit the Juarez rail yard about 4 p.m. and was given almost immediate clearance. Green thinks the radiation warning stickers on the barrels probably hastened the inspection.

By the close of business on Oct. 7, Operation Sand Patch was complete when everything was unloaded from the train. The barrels of radioactive sand were stored near the WSMR El Paso gate inside the Nuclear Effects Laboratory.

According to George Wentz, former chief of WSMR's Radiological Health Office, the barrels of sand were eventually just dumped in the desert. He said the half life of cobalt 57 is only 270 days. So, after 10 generations or just 7.4 years, the radiation in the drums was undetectable.

A report on Operation Sand Patch put the cost for the recovery effort at \$104,000. While this was going on the Air Force halted Athena launches and investigated what went wrong. White Sands personnel I talked to mention the fourth stage igniting prematurely, causing it to tip up and on a trajectory to the south.

An Air Force history of the Athena project states that two failure modes were postulated but without any of the third or fourth stage hardware to examine, the report concluded that "instrumentation data of Mission 122 did not provide conclusive evidence of the failure mode."

An urban myth has developed around this incident. Basically, it says there is an area in Mexico called the "Zone of Silence" that is like the Bermuda Triangle. The implication is that some physical anomaly in Mexico caused the Athena to head toward it and that the recovery team was actually a group of NASA scientists investigating the place.

Athena flights resumed on Jan. 9, 1971. The program ended in the summer of 1973.

[\[Security/Privacy\]](#) [\[Section 508 Initiative\]](#) [\[Contact the Webmaster\]](#) [\[Site Map\]](#)