

A Lasting Legacy of the Fukushima Rescue Mission: Part 3: Cat and Mouse with a Nuclear Ghost

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USS Ronald Reagan

By Roger Witherspoon

For several days, the winds from the destroyed nuclear reactors at Fukushima Daiichi crashed head on into the myth of the radioactive plume.

It is the most enduring falsehood of commercial nuclear power, promoted heavily by both the industry and its watchdog, the Nuclear Regulatory Commission. It is a myth with two conflicting premises:



Projected Fukushima Plume 3-11-11

- *Radioactive gasses spewing from a stricken reactor or spent fuel pool have an inherent property which holds them in a tight, thin stream which prevents widespread contamination.*
- *At 10 miles the plume disperses like steam from a teapot, leaving traces that are either too small to measure or are so minute as to be “below regulatory concern.”*

The contradiction between being tightly bound and widely dispersed is never challenged. It was most clearly enunciated at a public hearing April 8, 2002, in White Plains, New York, on the evacuation plans for the two Indian Point reactors, located about 30 miles north of Manhattan, owned by Entergy Corp. There was no dissent from NRC officials as Entergy’s Larry Gottlieb said, glibly, “the easiest way to avoid a radioactive plume is to cross the street.

“It’s kind of like someone pointing a gun at you and all you have to do is step to the left or right to get out of the pathway of the bullet. That’s all you have to do.”

During the frenetic first week after the March 11, 2011 earthquake and tsunami destroyed the infrastructure of Japan’s northeast coast, killed some 20,000 people, and set four of the six Fukushima Daiichi reactors on an irrevocable path to meltdowns, officials from the U.S. Departments of Defense, State, and Energy, as well as the Nuclear Regulatory Commission clung to the notion that the situation was manageable as long as the “plume” held true to the myth and blew out to sea.

That was paramount to DoD, which had 63 military installations throughout the Japanese islands containing some 60,000 men and women and their families. It was a relief, therefor, when the aircraft carrier, the USS Ronald Reagan reported March 13 that its sensors were picking up radioactive material on its flight deck, 130 miles off the coast.



Projected Fukushima Plume 3/12/11

According to the NRC Status Report, “The measureable radioactivity was consistent with the venting of the Fukushima Daiichi Unit 1 reactor. The Navy also collected air samples having activity above background from the ‘plume’. Analysis, the report states, would show the Reagan contaminated with “iodine, cesium and technetium, consistent with a release from a nuclear reactor.”

And that was good, because the plant operator, TEPCO, maintained that the reactors were under control and radiation stemmed from planned venting of built-up gasses, not from a complete meltdown. As long as the radiation was staying in a plume blowing out to sea, there would be no need to evacuate all the American bases, or the millions of residents in the Tokyo metropolitan area.

In reality, Fukushima Unit 1 began to meltdown as a result of the earthquake, before the tsunami hit and destroyed all backup power. The molten core of the reactor would melt through the reactor vessel and containment, crashing into the water below the reactor and sending radioactive steam surging out of the damaged building. Monitoring stations, which were not analyzed till January, 2013, found radiation rose more than 700 times the background levels at least an hour before the venting. Officials assumed the Reagan detected a controlled plume which, in fact, had not yet been created. Instead, the ships were in a radioactive cloud which had not been anticipated.

What TEPCO did not say – and what American officials overlooked in that hectic period – was the fact that the venting did not work.

“The difference between Chernobyl and Fukushima,” said nuclear safety engineer Arnie Gunderson, “was that the fire at Chernobyl sent the radiation high into the atmosphere and it was widely dispersed. There was no fire at Fukushima. You had those beautiful venting towers, but the vents were inoperable because there was no power to activate the industrial fans.

“So the radioactive steam just rolled out and over the countryside like ground smog. About 80% of it blew out to sea.”

And the discrete plume was a myth. The Reagan and its attendant warships constantly attempted to dodge a solid plume when, in reality, there was a spreading cloud continually overhead and increasing amounts of contaminated currents all around them.



Radiation Spread from Fukushima 3/11/11 – 3/24/11

By March 16, after explosions had destroyed the buildings housing Fukushima Units 1-4, Kurt Campbell, Assistant Secretary of State for East Asian Affairs, officials at the NRC and DoD were increasingly upset with the Japanese government for relying on TEPCO for information rather than taking charge.

*Asahi Shimbun, the Japanese newspaper, reported that “an internal report on the issue secretly circulated among top State Department officials on that day contained one word – ‘FUBAR’—or Fu**ed Up Beyond All Recognition.” (<http://bit.ly/Wb87Lc>)*

The NRC was also focused on preventing contamination on land. They were baffled when radiation was detected at the Yokosuka naval base 180 miles south of Fukushima, because all of their models were designed to show the radioactive “plume” going out to sea. What was lost in the concern over the millions of Japanese and thousands of Americans on land was the impact of the radiation going out to sea, where the USS Reagan’s strike group was providing search and rescue assistance under Operation Tomodachi.

In the midst of a disaster, that oversight was understandable. “I would have been in the same camp,” said David Lochbaum, nuclear safety engineer with the Union of Concerned Scientists. “I would have known there were people on land and, vaguely, out to sea. But given the choice of which way the wind was blowing, I would have had a sigh of relief that it was blowing offshore.

“Somewhere the light should have gone off that there was a Navy out there. But it didn’t.”

And the sailors of Operation Tomodachi were on their own.

The Nuclear Guessing Game Begins

In the military, information is amassed at the top, and then parsed out in pieces on a need to know basis. As the crisis developed off the coast of Fukushima, it was decided that most navy personnel needed to know very little. That stratification of knowledge was evident on the USS Ronald Reagan aircraft carrier, and accompanying Strike Group 7 was deployed to conduct search and rescue operations along the stricken Japanese coast. The navigators had to be given enough information to

work with.



“We knew there was a leak of radiation on land,” said navigator Jaime Plym, “and common sense meant it would be close to shore. Most of the time our ship was about two miles from shore because our helicopters were going back and forth.”

“In our position as navigators,” added Maurice Enis, “they let us know more about what was going on. But they didn’t want to cause a panic and get the crew scared. So they didn’t put out much information about the radiation leak.

“But we had to plot it on the charts, and guess what the danger zones were, and how far the plume clouds were going to travel. We didn’t know for sure, but we had sensors going off in the Pilot House on the bridge, and the actual helo guys they were sending out were doing testing of the air. “

In an effort to dodge a radioactive “plume” the admirals and captains in the carrier strike force ordered the navigators to plot the exact location of the Fukushima Daiichi plants. Then they plotted a nautical “T” from the plant site, by drawing a line 50 miles straight out to sea, and then crossing it with a line stretching 25 miles north and south of that spot. Lines from the end of the T back to the nuclear plant formed a triangle which the Navy assumed contained and confined the radioactive plume.

“They were just guessing,” said Plym. “We were supposed to avoid the triangle, but there were times where we had to go through the plume to deliver supplies to the Japanese, and aid and food and water. We just couldn’t or didn’t have the time to go all the way out and around the triangle and come back on another side.

“When we pulled into shore to give them supplies it was pretty much in the plume area. We were only two miles off the coast and even if we were outside the triangle that they had us draw, we did pass through the triangle.”

But the triangle wasn’t their only problem. Frequently, helicopter or jet pilots would return with data showing radiation in the area, and the ship would take a detour from the unseen menace.

“We stayed offshore about 80 days,” said Enis, “and the way it worked was we would stay close to shore and then sail away. It was a cat and mouse game, depending on which way the wind was blowing. We were never sure where it was. Then came the first scare, and we found there was radiation when the Japanese had told us there was none. So we went on lockdown and had to carry

around gas masks.”



Navigator Enis in Hazmat suit

Yet the lack of concrete information and the lack of trust in the Japanese led to a ship full of rumors and fears. Transcripts of conference calls centered in the Nuclear Regulatory Commission’s Emergency Operations Center reveal that the captain of the Reagan was ordered to take hourly readings of radiation and send them to the American Embassy for processing. The ship was contaminated with cesium, iodine, and technetium, all products of nuclear reactors. The Defense Department did not want to rely on information from the Japanese government or TEPCO. Navigators like Enis and Plym were given some information from the data collected by the pilots.

“We could actually see certain parts of the sea chart where radiation was actually found,” said Enis. “And to try and navigate through that was nerve wracking. There was no absolute way for us to know how much radiation was out there, though, because we were still being told by the power company that we shouldn’t worry.

“For the rest of the ship, who didn’t even know what we knew, there was just word of mouth and rumors.”

When the helicopters and jets returned from their missions they were met by personnel in radiological suits who would scrub the craft down with soap and water. They never knew if it was useful.

“I was aggravated the whole time,” said Plym. “It doesn’t matter what is happening, because it’s not like you can say ‘Forget this! I’m going home!’ So you turn into a zombie and say OK, I’m going to wash now and it will be all right. But we were scared the whole time we were over there.

“None of us knew anything about radiation. We were thinking we’re going to grow extra arms! It was funny. We talked about those that used to make the digital watches, and how they all died of cancer and wondered if that would be us. We didn’t really know. We went back and forth between freaking

out and ignoring it.”

In a sense, the military discipline helped the sailors work through their fear.

“You get an order and you follow it,” said Enis. If they tell us to spray the ship to clean it, we do that and think we’re cleaning it. But if someone at the top was given wrong information about cleaning radiation from the ship, then we were pretty much going in circles.

“So you think of the greater good that you’re doing – especially when you see entire houses floating by the ship and wonder if there is a family dead inside. And you think about the small children on land and how happy they are when the helos come to give them food. You focus on that more than on your own self or your own fears.”

Mechanics and Hot Engines



Jennifer Micke

There were no windows below decks on the Reagan, where Jennifer Micke and her crew worked to keep the F-18 jets in top condition. The Reagan, with a crew of 5,500, was five times larger than Thorp, Wisconsin, the little farming community where Micke grew up on a dairy farm down the road from her grandparent’s farm. It had been expected that, one day, she’d have a farm of her own a bit further down the road.

“We went on a family trip to the Osh Kosh Airplane Museum when I was in high school,” said the 22-year-old jet mechanic. “And that got me hooked on aircraft. I chose the Navy because I wanted to be on a boat, and the Air Force didn’t feel like fun.

She actually signed up in 2009 during her senior year at Thorp High School and left after graduation for the Navy’s Great Lakes training center. She was 18.

“Boot camp was terribly easy,” she said in an interview from her parents’ living room. “It was definitely the experience of a lifetime. In high school I played golf and was a solid C student. Honestly, they were

trying to teach me a bunch of stuff I really didn't care about.

"Once I got into Navy school I was tops of my class. I was class leader. I was awesome. In the Navy, they were teaching me stuff I had a passion for and really enjoyed. We had a metal fabricating course and the mock section of a wing. And they would knock a huge hole in the side of it and we had to patch it and make it air worthy again.

"I enjoyed that a lot! That's not like milking cows. Not at all!"

She came out of the school a certified air frames mechanic and was flown to San Diego to join the USS Reagan. "When I first saw the Reagan, I was expecting it to be bigger. I saw it pull up to the dock and said 'that's it?' The movies made it look like this huge thing. How in the hell does a plane land on this thing? I was quite shocked."

Under normal conditions, one doesn't feel confined on a ship a quarter of a mile long. But everything changed for the rescue mission. "Once we started Operation Tomodachi," Micke said, "it was very limited as to who went up on deck. We went up for mandatory inspections of the planes bolted to the flight deck. Otherwise, everything was brought down to the hangers and had to be passed by Geiger



counters.

"I remember having to wear everything – rubber gloves, goggles, and we were supposed to be wearing aprons. We were issued masks and canisters, but we never ended up actually using them. They were considered dirty jets because of the radiation. We would take the brakes off and take them over to a special area to be tested because they were dirty. We had cleanup routines we went through and washed everything over and over to the point where you could stop testing and setting off alarms.

"For every panel we took off, we had to turn a part in and take it to someone for testing. If the radiation was higher than allowed, you had to call other people to take care of it. It made the work more difficult."

There were no manuals on how to keep radiation from spreading through the ship – inevitably, particles clinging to clothes or shoes, or blown in with the air would contaminate interior sections and set off alarms. The sailors improvised.

"The method of keeping radiation out, to keep it from seeping under the doors, was to stuff all the door jams and cracks with rags and there were signs all over the place saying 'Do Not Remove Rags'. I thought that was pretty interesting.

"I was always scared."

It was interesting, but ineffective.

Up on the captain's bridge it became clear that the ship was contaminated. It had snowed and sailors

had a snowball fight – till the sensors revealed that the snow itself was contaminated, having scrubbed skies of radioactive particulates. Turning on the high pressure hoses, which take water from the sea, to clean off the decks only made matters worse.

“TEPCO, the nuclear plant operator, was telling our representatives that they weren’t leaking radiation at all. But the entire ship got contaminated. They made the entire crew get chemical, radiological, and biological warfare suits. Then we had to use gas masks in case the air was contaminated.

“We ran out of water for a day and had to cut out showers. They had to pretty much discharge all the water we had in our tanks and scrub out the tanks. They couldn’t do that till we were way out to sea.”



The problem lay in the ship’s water system, which relied on uncontaminated ocean water.

“We make our own water using desalinization plants on board,” explained Plym. “So they had to get rid of all the water throughout the ship and keep testing till it was clean. That was hard. We had been getting water from the ocean and the ocean was contaminated. And on ship, water was in everything. “

Cleaning an aircraft carrier while on maneuvers is not a simple task. “You pretty much have to lock down the ship,” said Enis , “then scrub down anyone who is infected, and scrub down all the tools and everything in each section. Then you go through three checkpoints to make sure there is no radiation in you or on you before you can go to the clean part of the ship.”

And power on the carrier was reduced because the Reagan’s own nuclear power plant needed clean water for its cooling system, which was essential for the actual power generating turbine. Contaminating the “clean” side of the nuclear power plant would make it impossible for sailors to work there.

“They just shut off all the water and drained it till all the contamination was gone from the ship,” said Enis.

–Winifred Bird contributed reporting from Japan

A Lasting Legacy of the Fukushima Rescue Mission

Part 1:

Radioactive Contamination of American Sailors

<http://bit.ly/12dzbLe>

Part 2:

The Navy Life – Into the Abyss

Part 4

Living with the Aftermath