

Fukushima Rescue Mission Lasting Legacy: Radioactive

Contamination of Americans 福島救援活動の永続する遺産—アメリカ人の被曝

Roger Witherspoon

Japanese translation is available
(<http://besobernow-yuima.blogspot.jp/2013/04/vol.html>)



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Who are the victims of Japan's great 3.11 earthquake-tsunami-nuclear meltdown? This journal has documented the heavy price paid by the more than 20,000 who died in the tsunami,

the hundreds of thousands driven from their homes by the combination of tsunami and meltdown, and the nuclear workers who have fought to bring the radiation at the Tepco plants under control at risk of their lives. Roger Witherspoon extends this analysis to the US servicemen and women of Operation Tomodachi who were exposed to dangerous levels of radiation with little preparation or protection. And in many cases with no access to medical care after completing their terms of service. Some of them are now suing Tepco for lying to the US government and Navy in a hope of recovering damages and treatment, as described and documented below. This is the first of two major articles on their plight and their fight. Asia-Pacific Journal

The Department of Defense has decided to walk away from an unprecedented medical registry of nearly 70,000 American service members, civilian workers, and their families caught in the radioactive clouds blowing from the destroyed nuclear power plants at Fukushima Daiichi in Japan.

The decision to cease updating the registry means there will be no way to determine if patterns of health problems emerge among the members of the Marines, Army, Air Force, Corps of Engineers, and Navy stationed at 63 installations in Japan with their families. In addition, it leaves thousands of sailors and Marines in the USS Ronald Reagan Carrier Strike Group 7 on their own when it comes to determining if any of them are developing problems caused by radiation exposure.

The strike group was detoured from its South Pacific duties and brought to Fukushima for Operation Tomodachi, using the Japanese word for “friend.” It was an 80-day humanitarian aid and rescue mission in the wake of the earthquake and massive tsunami that decimated the northern coastline and killed more than 20,000 people and left hundreds of thousands homeless.



Tsunami Strikes

The rescue operation was requested by the Japanese Government and coordinated by the US State Department, the Nuclear Regulatory Commission, and the Departments of Defense

and Energy. In addition to the USS Ronald Reagan with its crew of 5,500, the Strike Group included four destroyers – The Preble, McCampbell, Curtis Wilbur, and McCain – the cruiser USS Chancellorsville, and several support ships ([link \(http://bit.ly/11bfTqS\)](http://bit.ly/11bfTqS)).

It was the participants in Operation Tomodachi – land based truck drivers and helicopter crews, and carrier based aircraft and landing craft – who were repeatedly trying to guess where the radioactive clouds were blowing and steer paths out of the way. It was unsuccessful on more than one occasion, according to Defense Department records and participants, resulting in efforts to decontaminate ships travelling through contaminated waters and cleansing helicopters only to send them right back into radioactive clouds.

So far, however, more than 150 service men and women who participated in the rescue mission have since developed a variety of medical issues – including tumors, tremors, internal bleeding, and hair loss – which they feel were triggered by their exposure to radiation. They do not blame the Navy for their predicament, but are joined in an expanding law suit against the Tokyo Electric Power Company, TEPCO, for providing false information to the US officials about the extent of spreading radiation from its stricken reactors at Fukushima. And the decision by the Defense Department to abandon the registry leaves them on their own. ([link \(http://bit.ly/XpfjW5\)](http://bit.ly/XpfjW5))



USS Ronald Reagan

Jobs are compartmentalized at sea explained Navy Quartermasters Maurice Enis and Jaime Plym, two of the navigators on the carrier Reagan. Few of those on board knew there were dangerous radioactive plumes blowing in the wind and none knew what ocean currents might be contaminated. They did know there were problems when alarms went off.

“We make our own water through desalinization plants on board,” said Plym, a 28-year-old from St. Augustine, Florida. “But it comes from the ocean and the ocean was contaminated. So we had to get rid of all the water on the ship and keep scouring it and testing it till it was clean.

“You have a nuclear power plant inside the ship that uses water for cooling, and they didn’t want to contaminate our reactor with their reactors’ radiation.”

But avoiding it was not easy. It meant going far enough out to sea where there were no contaminated currents, washing down the ship

and its pipes, and then going back towards shore.

“We could actually see the certain parts of the navigation chart where radiation was at, and to navigate through that was nerve wracking,” said Enis. “The general public, like the ship, didn’t really know where it was or what it was and relied on word-of-mouth and rumors. We have more information, but there was no absolute way for us to know how much radiation was out there because we were still being told by the (Japanese) power company that we shouldn’t worry.

“We stayed about 80 days, and we would stay as close as two miles offshore and then sail away. It was a cat and mouse game depending on which way the wind was blowing. We kept coming back because it was a matter of helping the people of Japan who needed help. But it would put us in a different dangerous area. After the first scare and we found there was radiation when they (the power company) told us there was none, we went on lockdown and had to carry around the gas masks.”

When it came to getting timely information on radiation, the Americans on land were just as much at sea. Gregory Jaczko, then Chairman of the US Nuclear Regulatory Commission, urged the evacuation of all Americans within 50 miles of the stricken reactors. And the Defense Department evacuated women and children from the Yokosuka Naval Base, located 300 miles south of Fukushima, after sensors picked up

increases in background radiation.

Information was hard to come by, exacerbated by the rigidity of the Japanese bureaucracy. Two nuclear experts at the Union of Concerned Scientists, David Lochbaum, who has worked as a consultant for the NRC and industry, and Ed Lyman, a nuclear physicist, have examined thousands of government emails and cable traffic during a confusing period when the data base shifted by the hour and concrete information was hard to come by.



David Lochbaum

“After the explosion in Fukushima Daiichi Unit #4 the Japanese were not able to get enough water into the building to keep the spent fuel pool cool,” Lochbaum said. “So the US airlifted a concrete pumper truck all the way from Australia to an American naval base in the northern part of the island. And the Japanese would not let it leave the base because it wasn’t licensed to travel

on Japanese roads. Given the magnitude of their problems, that seemed to be the wrong priority.



Fukushima Daiichi Reactors Explode

“But the Japanese culture is more like a symphony, where everyone follows the conductor’s lead. Whereas American society is more like a jazz ensemble where everyone is playing together, but improvisation is prized.”

The inability to get cohesive, trustworthy information from the Japanese hampered the American rescue effort.

Michael Sebourn, senior chief mechanic for the helicopter squadron based at Atsugi, about 60 miles from Fukushima, recalled that “after the earthquake and tsunami we were given one day notice to pack up the command and go to Misawa, Japan Air Base to provide relief efforts to the Sendai and Fukushima areas. All of the other squadrons were evacuating to Guam. There was a big possibility that the base at Atsugi would be shut down and we would never be returning. We were told to put our names and phone numbers on the dashboards of the cars

because we would probably not get them back.

“We were in Misawa 3 ½ weeks, working every day, flying mission after mission after mission to pick people up, rescue people, ferry supplies and things like that. There were a few nuclear technicians scanning individuals coming back from missions. Many times they would cut off their uniforms.” The decontamination team cut off their uniforms to avoid touching them and further contaminating them.

Sebourn was sent to Guam for three days of intensive training and became the designated radiation officer. It wasn’t easy.

“This was a completely unprecedented event,” he said. “We had never dealt with radiation before. We were completely brand new to everything and everyone was clueless. We had had drills dealing with chemical and biological warfare. But we never had any drills dealing with radiation. That was nuclear stuff and we didn’t do nuclear stuff. The aviation guys had never dealt with radiation before. We had never had aircraft that was radiated. So we were completely flying blind.”

There were rules for Sebourn’s group of mechanics. They scanned the returning helicopters for radiation, and then removed any contaminated parts and put them in special containers filled with water and stored on an isolated tarmac. It began snowing in Misawa so the group moved back to their base at Atsugi,

closer to Fukushima. Sebourn tracked varying radiation levels in units called Corrected Counts Per Minute on their electronic detectors.

“Normal outside radiation exposure is between five and 10 CCPM,” he said. “And that’s from the sun. At Atsugi, the background readings were between 200 and 300 CCPM in the air. It was all over. The water was radiated. The ground was radiated. The air was radiated.

“The rule was if there was anything over a count of 500 you needed special gloves. Over 1,000 CCPM and you needed a Tyvek radiation suit. And if it was over 5,000 you needed an entire outfit – suit, respirator, goggles, and two sets of gloves. You couldn’t put a contaminated radiator back into the helicopters – they had to be replaced. I remember pulling out a radiator and it read 60,000 CCPM.”

But in the end, the safety equipment may not have been enough.

The Tomodachi Medical Registry, developed over a two year-period and completed at the end of 2012, was a collective effort of the Departments of Defense, Energy, and Veterans Affairs launched at the insistence of Vermont Senator Bernie Sanders, chairman of the Senate Veterans Affairs Committee. (link (<http://bit.ly/14ABPuj>))

It was an exhaustive registry essential to develop a medical baseline from which to determine if

there were any long lasting repercussions from exposure to radioactivity – particularly iodine and cesium – spewing for months from the Fukushima Daiichi reactor units 1 through 4 into both the air and the sea.

The Registry was unparalleled in its depth. The Defense Department’s 252-page assessment of radiation doses the 70,000 Americans may have been exposed to is broken down by a host of factors, including proximity to Fukushima, the type of work being done and its impact on breathing rates, changing weather patterns, sex, size, and age. In the latter category children were divided into six different age groups, reflecting their varying susceptibility to radiation. (link (<http://bit.ly/U42a1>))

In addition, the report states, “over 8,000 individuals were monitored for internal radioactive materials and the results of those tests were compared with the calculated doses.”

In the end, however, the Department concluded that their estimates of the maximum possible whole body and thyroid doses of contaminants were not severe enough to warrant further examination.

Navy spokesman Lt. Matthew Allen, in a written statement, said “The DoD has very high confidence in the accuracy of the dose estimates, which were arrived at using highly conservative exposure assumptions (i.e., assuming individuals were outside 24 hours a day for the 60 days in

which environmental radiation levels were elevated and while breathing at higher than normal rates).

“The estimated doses were closely reviewed by the Veterans’ Advisory Board on Dose Reconstruction and by the National Council on Radiation Protection and Measurements who both agreed that the methods used to calculate the estimates were appropriate and the results accurate. In addition the dose estimates were consistent with the estimates made by the Japanese government and by the World Health Organization.”

Defense Department spokeswoman Cynthia Smith added that as a result of the agency’s decision that there was no serious contamination, “There are no health surveillance measures required for any member of the DoD-affiliated population who was on or near the mainland of Japan following the accident and subsequent radiological release from the Fukushima Daiichi Nuclear Power Station beginning on or about March 11, 2011.”

But there are skeptics of the Defense Department’s blanket conclusion that there was not enough radiation poured into the environment to warrant continuous monitoring of the men, women, and children living and working there.

“Radiation does not spread in a homogenous mix,” said Lochbaum. “There are hot spots and

low spots and nobody knows who is in a high zone or in a low zone. Who knows what the actual radiation dose to an individual is? There are no measurements of what they consumed in water and food.

“This is the Navy’s best attempt to take a few data points they have and extrapolate over the entire group. They took a lot of measurements, but those represent just a point in time. It’s like taking a strobe light outside to take a picture of a nighttime scene. Every time the strobe flashes you will get shots in spots of the area. But do you really capture all of the darkness?”

The Navy Life – Into the Abyss (<http://spoonsenergymatters.wordpress.com/2013/02/11/a-lasting-legacy-of-the-fukushima-rescue-mission-part-2-the-navy-life-into-the-abyss/>)

To the US Government, Operation Tomodachi was just another big humanitarian aid and rescue mission in which the nearest Navy fleet and many land-based personnel rushed to the aid of an ally in need. In this case, the northeast coast of Japan had been flattened by a massive earthquake and tsunami, which destroyed infrastructure, killed some 20,000 citizens and left 315,000 refugees, many of whom may never return to their homes in contaminated areas.

Operation Tomodachi – named after the Japanese word for Friend – began as a large logistical exercise. It seemed that way to the American sailors, both land-based and in the USS Ronald Reagan Aircraft Carrier

Strike Group. The view from Washington was that Operation Tomodachi would enhance the long ties between allies.

Then everything changed.

The nuclear fuel in reactors 1, 2, and 3 at Fukushima Daiichi overheated and melted down, creating a hydrogen cloud in the process, which exploded, spiking radiation readings on detection monitors across Japan. Hydrogen from Unit 3 migrated through a shared venting system into Unit 4 and blew off its roof as well, exposing the spent fuel pool and its 1,500 bundles of fuel rods containing a lethal mix of cesium, iodine and plutonium.



Gregory Jaczko

Transcripts of meetings and conference calls hosted by Nuclear Regulatory Commission Chairman Gregory Jaczko showed steadily increasing concern as newer data contradicted previous data and measurements of radiation from the Navy differed markedly from the information coming from the Japanese government and TEPCO, the giant utility which owned the stricken reactors. NRC’s Operation Center Fukushima Transcript Note large censored passages,

including the identity of the speaker JACK GROBE: The, the answer is the dose rates don't seem to be consistent either with what would be released or with the timing that it would take for a plume to get 180 miles away from the site to the southwest.

The NRC itself was flying blind. The agency had believed it was virtually impossible to have multiple meltdowns at the same site. As a result, the emergency models all involved the healthy plant using its working systems to control critical systems in the stricken plant until the problems were solved. Jaczko had publicly urged calm and for Americans in Japan to follow the guidelines of the Japanese government. NRC press releases in the United States all stated prominently that there was no danger from radioactive fallout.

MIKE WEBER: Yeah, well, that's what struck me when you told us what's going on.

JACK GROBE: Yes, but the, the feedback through Trapp from the admiral is that they used multi* instruments and confirmed this in multiple ways

[BLACKED OUT]

MIKE WEBER: Wow.

JACK GROBE: They do operate nuclear-powered aircraft carriers, so they must have a level of competence that's fairly decent. [...]"

But the transcripts tell another story. On March 14 Jaczko's conference call was interrupted by Jack Grobe, Deputy Director for Engineering in the Office of Nuclear Reactor Regulation, with bad news: This was new territory, and they could not trust data from the Japanese.

"JACK GROBE: Okay, guys, I apologize for bothering you, but things are degenerating quickly. This reminds me of the drill. [...]"

For the Americans in Operation Tomodachi, this meant they would be improvising throughout the crisis. They faced the dual needs to conduct search and rescue missions in a devastated landscape with little functioning infrastructure while guarding against unseen and unforeseen contamination from the stricken reactors.

what's really troubling is that we, we have had that wind shift — the Chairman's here, by the way — we've had that wind shift and the wind is out of the northeast blowing towards the southwest. That's inland and towards Tokyo. And there's an aircraft carrier in the port just south of Tokyo. It's about 180 miles from the site, about 10 miles southwest of Tokyo and they're measuring on the order of 10 to 20 millirem over a 12-hour period total effective dose and roughly five to 10 times that, thyroid. [...]"

To officials at the Defense and State Departments, and Nuclear Regulatory Commission, Operation Tomodachi was a successful, limited duration event in which the military worked in a civilian humanitarian mission. It was requested, logged, and finished.

But military operations are carried out in real time by people implementing orders from half a world away who have to live with the consequences of making the mission succeed.

And for some of the Americans sent into action Operation Tomodachi would mean the end of a career and dream of service in the US Navy, and the start of a new life laced with anxiety.

The Junkie's Kid

Michael Sebourn was just another kid nobody wanted, from a neighborhood nobody cared about, with a future leading towards jail or death and a life nobody would have missed. Then he met the US Navy.

“My mother was a drug addict and my father was killed when I was 18 months old trying to rob a drug dealer,” he said. “We lived in the housing projects in Charleston, South Carolina. My stepfather was abusive and spent all the money my mother made on drugs and alcohol. I was malnourished and underweight.”

At age five he was sent to live with his grandparents, who died two years later. He moved in with an aunt in Gary, Indiana, a poor white kid in a predominantly poor, black part of a decaying city.



Michael Sebourn

“I never thought I would ever be able to accomplish anything,” Sebourn said. “I knew college was out of the question because I was poor. I worked in a factory for a while after high school, but that didn’t work out and I was homeless for three months, living out of a truck and driving to Wal-Mart parking lots to sleep.”

He moved back in with his aunt. He had a bad attitude, made bad choices, and “had a couple of run-ins with the law. I needed something new. I had nothing going for myself at all and I wanted a fresh start. I asked my aunt if I should join the military and she ran into the kitchen and got her car keys and said ‘let’s go’. Two days later I was gone.”

He did well in the Navy’s Great Lakes training station and when he was offered a choice of assignments, it turned out to be administrative. “Something clicked,” he said of his entry into the Navy in 1993. “I got my pride back. I got a sense

of worth and I started succeeding. I decided serving in the Navy was something I needed to do.

“It was the first time I felt I had a home. It was the first time I felt I had a family.”

It would not be his only family.

He landed in Japan 17 years ago, loved it and stayed at the Navy’s Misawa naval air base, working his way up to head mechanic for the helicopter squadrons based there. He married a Japanese woman and, eventually they had a son. He was half a world and a full life away from the drug dens of South Carolina. He was a Navy man.

The Athlete and the Musician

Maurice Enis was a tall, strapping kid from the frost belt of Rochester, Minnesota whose world revolved around sports and physical fitness. “I was running track at Century High School in Rochester,” he recalled, “doing the 400 and 200 meters and wanted to continue.



ce Enis

Mauri

“My coach was an ex-Marine who had traveled the world, competing for the military. It sounded like a great life and I wanted to compete for the Navy, too. When I was 19, we went down to the recruiting station and talked about the opportunities they had, and I enlisted. It was 2007, but there was a lot of crying at home because my Mom was afraid I would get hurt because of the war and 9/11. But I told her that this is what I want to do with my life.

“And it was good. It saved me, in a way. I was aimless and it taught me a lot more about my time and what you can do and accomplish. Being deployed, you have no time to do anything extra. Every minute of the day is accounted for. When you get out and have 24 hours to play with, I can accomplish so much more now because I can manage my time and I learned how to prioritize.

“I really did grow up in the Navy. They didn’t have track and field in the Navy anymore, so I chose navigation and general quartermaster. There is the old school way, navigation using different celestial bodies, and the new way, which is all math and computers. You learn to use all the different navigation systems that we have. You apply it to the paper nautical charts and use the satellites and you can actually figure out exactly where we are in the water.”

He also fell in love.

Jaime Plym came from as far away from the snow as one can get without swimming in the

Caribbean, which she also enjoyed. She grew up in St. Augustine, Florida, one of the nation's oldest cities and went on to attend Jacksonville University for two years as a music major, playing bass clarinet.

I decided I wanted music in my life," Plym said, "but I didn't want it as my job. I quit school and just worked as a pre-school teacher in Gainesville. I wanted to go back to school, but I had been on a music scholarship and I didn't have the money for any other major."

She felt aimless, and went home and loafed on the beach as 2007 drew to a close. She had a brother who was in the Marines and decided she, too, could join the service. "But I wanted to be out to sea," she said. "I wanted to be on a big ship."

Plym and Enis were in the same class at the Great Lakes training center and came together at the end. "I was trying to figure out what I wanted to do," she said. "They told me about quartermaster, which meant we worked at the command center and were responsible for navigation. I signed up for it."



Jaime Plym

Navigation is critical, especially on an aircraft carrier. Other naval craft can move and shift to be in the most favorable position regarding the wind and the currents, with their navigators finding the best and quickest routes to take. That is especially important if there is danger approaching, like a slow moving radioactive cloud.

Navigators on an aircraft carrier do not have that luxury. Their quarter-mile deck slowly rolls side to side, and up and down in accordance with the sea. They must find the smoothest spot and hold it for the duration of the mission, regardless of what comes. After the aircraft leave the deck, the ship must remain at that spot so they can find their way back.

That makes dodging dangerous winds and radioactive currents problematic.

But they didn't know that when they graduated from the training camp and began life as quartermasters and navigators on the USS Ronald Reagan, head of a carrier battle group plying the South Pacific.

"We had a lot of fun," said Plym. "We were friends at first, and then we started dating."

On March 11, 2011, the USS Ronald Reagan and Carrier Strike Group 7 were headed for port in South Korea as a tsunami struck the northeastern coast of Japan.

"We knew right away they were going to redirect us to go to Japan and provide aid," Plym said. "We were there by 5 AM the next morning."

"We didn't know about the reactors," said Enis. "We didn't have outside contact like the internet or cable to know what was going on on land. We just knew there was a major crisis. We had no idea about the nuclear plants till they notified the captain of a possible radiation scare. That's when we found out that there might be a possible radiation leak."

Something New: Radiation



Operation Tomodachi began with the request for help from the Japanese Embassy to Kurt Campbell, assistant secretary of state for East Asian and Pacific affairs who quickly turned to Gregory Jaczko, then chairman of the US Nuclear Regulatory Commission, and Admiral Mike Mullen, Chairman of the Joint Chiefs of Staff, who would regularly brief President Barack Obama on the escalating difficulties on land.

What had begun as a rescue mission was being increasingly complicated by spreading radiation from Unit 1 at the six-reactor, Fukushima-Daiichi nuclear complex. At least three other reactors were in danger of failing, including the spent fuel pool of reactor Unit 4, holding 1,535 bundles of irradiated fuel.

On March 12, as the USS Ronald Reagan and Carrier Strike Group 7 arrive two miles off the coast, Fukushima Unit 1 blows up. Unit 3 would explode March 14, and the hydrogen gases migrating through a shared vent would also destroy the containment building at Unit 4, exposing the spent fuel pool to the

air. Unit 2 would explode March 15. Tokyo Electric Power Company (TEPCO) would announce that most of the fuel in Units 1, 2, and 3 are intact. They weren't. They had fused into a molten mass and were oozing through the bottom of their destroyed reactor.



At the Nuclear Regulatory Commission, Jack Grobe is leading a crisis team in the 24-hour Operations Center of the fuel in Units 1, 2, and 3 are intact. They weren't. They had fused into a molten mass and were oozing through the bottom of their destroyed reactor. The long held belief that it was impossible to have multiple meltdowns in a single nuclear complex, and that the containment structure would stop radiation from spreading from a reactor to the environment – have proved disastrously wrong and their scenarios for keeping people safe from spreading radiation are being called into question.



The Japanese government, not wanting to acknowledge that the situation was getting out of control, did not activate its military, the Self Defense Forces, to airlift water to the stricken Unit 4 and continuously drop it on the spent fuel to keep it from exploding in a nuclear fuel fire. According to Asahi

Shimbun, a leading Japanese newspaper, which obtained the communications between Tokyo and Japan's embassy in Washington, Mullen sent a cable to Fujisaki Ichiro, Japan's ambassador to the US stating that the SDF should be used to cool the reactors:

The NRC's redacted transcript of those conversations shows that after the explosion at Unit 4 Grobe says in exasperation, "The projections on releases with the containment intact are completely insignificant now.

"I mean, this is beginning to feel like an emergency drill where everything goes wrong and you can't, you

"The U.S. military believes the No. 4 reactor is in danger. It feels every step should be taken to cool the reactor, including using the SDF," the cable said (<http://spoonsenergymatters.files.wordpress.com/2012/03/tepc-pix-fukushima-reactors-3-left-4-which-deal-with-the-nuclear-accident-the-president-is-also-very-concerned-link> (<http://bit.ly/WS7rXG>))

But the NRC released several daily press releases, *the* He is the author of *Martin Luther King, Jr., To the* reassuring the public that there was no danger to the *Mountaintop* and co-author of *Feats and Wisdom of* public. *the Ancients.*

And on the high seas and at the American naval *Winifred Bird* contributed reporting from Japan. installations, the sailors of Operation Tomodachi were *She is a freelance journalist living in Nagano, Japan.* on their own. *Her work has appeared in the Japan Times, Science,*

This is part one of a two part series by Roger *Yale Environment 360, Dwell, and other publications.* Witherspoon. *Recommended citation: Roger Witherspoon,*

Roger Witherspoon writes Energy Matters *"Fukushima Rescue Mission Lasting Legacy: Radioactive Contamination of Nearly 70,000* (<http://www.RogerWitherspoon.com>)._ *Americans,"The Asia-Pacific Journal*

Wm. Roger Witherspoon has spent more than 40 *Vol 11, issue* years working in all forms of the media as a 11, No. 4, March 18, 2013. journalist, author, educator, and public relations specialist. He has written extensively on state and national politics, foreign affairs, finance, defense, civil rights, constitutional law, health, the environment, and energy.

Most of his career has been in the news business, *Articles on related subjects* working as a full time reporter, editor, columnist, • Gabrielle Hecht, Nuclear Janitors: Contract Workers at the Fukushima Reactors and Beyond (<http://apjff.org/-Gabrielle-Hecht/3880>) or producer for a variety of media companies including newspapers (*The Record* N.J.; *Star Ledger* N.J.; *NY Daily News*; *Atlanta Constitution*; *Dallas Times Herald* and *Journal News* (N.Y.); television (CNN, KNBC and NBC Network); and radio (WCBN, MI).

As a free lance writer, he has written for several publications, including *Time*, *Newsweek*, *Fortune*, *Essence*, *Black Enterprise*, *The Economist*, and *US Black Engineer & IT*

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- Shaun Burnie, Matsumura Akio and Murata Mitsuhei, The Highest Risk: Problems of Radiation at Reactor Unit 4, Fukushima Daiichi (<http://apjff.org/-Murata-Mitsuhei/3742>)

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