

Naraha Tech News

Journalism School:
Team No.3

Robots working to decommission the reactors

With the passion of people

On October 30th, it has been a little over 10 and a half years after the Great East Japan Earthquake and TEPCO's Fukushima Daiichi Nuclear Power Station's accident. Team 3 of the Journalism School program visited the Naraha Center for Remote Control Technology Development (NARREC) of the Japan Atomic Energy Agency (JAEA). The center was futuristic and we felt like we were in another world. We learned about the robot technology working inside the reactors to decommission them. We felt the passion the workers had for their work.

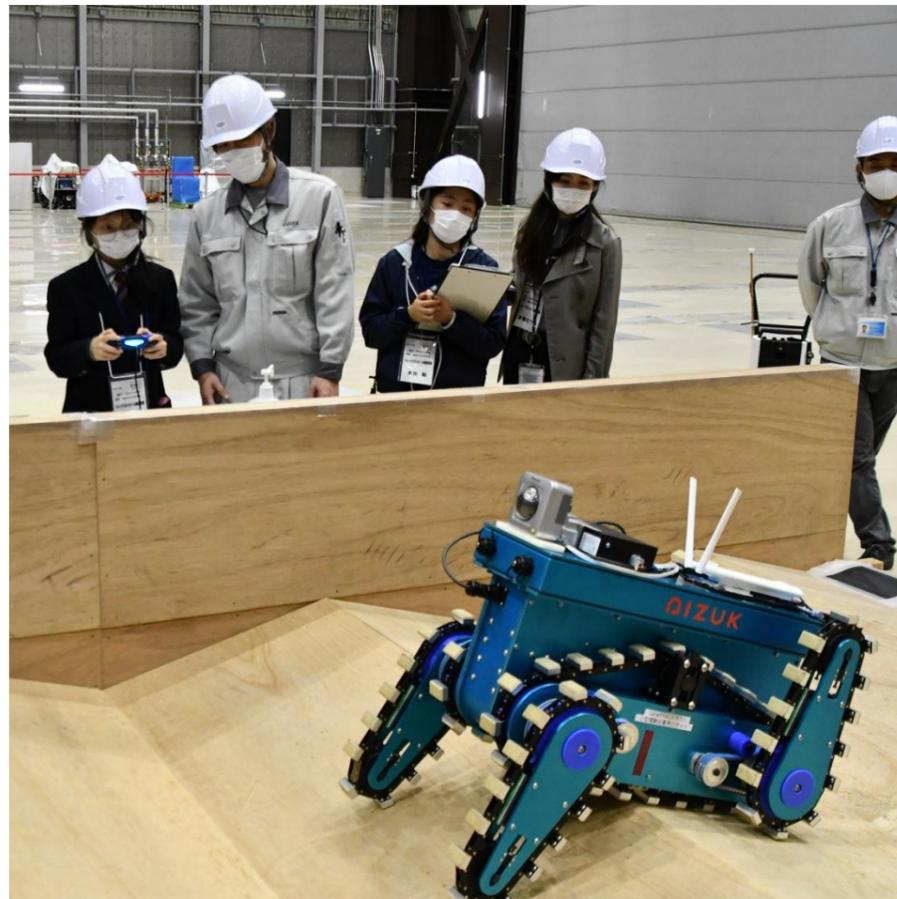
(Rumon Haraikawa, Haruka Sato, Yui Hon-

The center is a research and development facility for creating and demonstrating robot technology used to assist the decommissioning of the Fukushima Daiichi Nuclear Power Station. It consists of the Research Management Building (two stories above ground, steel construction) and the Full-scale Mock-up Test Building (four stories above ground, steel construction). Investing a total construction cost of about 10 billion yen, the facility opened in April 2016.

The Full-scale Mock-up Test Building

can be used for real-life environment testing, including tall building and underwater testing. It is also used as a place to test robots not related to decommissioning operations, and a robot contest for students of colleges of technology who regularly use this facility as their venue. During the COVID-19 pandemic, some tests were remotely conducted. This 40-meter-tall building is overwhelmingly big and it reminded me of the special effects of "Ultraman," a Japanese Superhero TV program.

The Research Management Building has a virtual reality (VR) system that can simulate the nuclear reactor in 3-D on 4 screens. The footage was originally rec-



Reporters operating the robots

orded by robots that actually went inside the reactor. It felt tense with the air dose rate displayed on the screen and the realistic image it recorded.

Yoichi Kashima (age 60), the deputy director of the center, said during the interview, "Even though I wasn't directly involved with the nuclear accident, I still feel responsible as someone

working with atomic energy. I'm committed to carrying out the decommissioning and I am doing everything I can for the revitalization of the re-

gion." So Shibamura (age 27), who does clerical work at the center says, "I talk to a lot of people and I feel that many people from outside of Fukushima still think that 'Fukushima is dangerous and scary.'" I hope we can help revitalize Fukushima by sharing the right information, and being involved with local events and festivals."

Robot development might sound hard and cold, but there was a noticeable passion from the workers doing it. We are the generation who will be witnessing the process of Fukushima's revitalization, and it is our responsibility to treat it as our own issue, without letting it fade away.



Simulated exploration with VR



40-meter-tall Full-scale Mock-up Test Building

Operating mobile and underwater robots

Difficult operation and advanced technology

Mobile robots climb up and down stairs in dangerous areas, and underwater robots are used to explore inside the melt-down reactor buildings. I tried operating both types, but I found it difficult to maneuver them because in order to operate them properly, you would need to consider not just height and width but the

depth of the area only from the image fed through the robot's camera lens. It is going to take more time to complete the decommissioning process. I felt the difficulty and the advanced technology first hand through this experience. (Rumon Haraikawa, Team leader)



Reporter Haraikawa operating the robots (right)



Continuing to learn to broaden my knowledge

Rumon Haraikawa

Asakareimei High School, Freshman

Naraha Center for Remote Control Technology Development (NARREC) of the Japan Atomic Energy Agency (JAEA) is a facility that develops and deals with robot simulation systems to tackle nuclear power disasters. The center continually attempts various methods in tackling challenges, under the national project “Fukushima Innovation Coast Framework,” which aims to change the “affected areas” into “areas which take up challenges” by clustering new industries in the Coastal Region.

I joined this program because I wanted to know what kind of technology is used for retrieving meltdown fuel debris caused by the nuclear disaster after the Great East Japan Earthquake. I had the opportunity to try a VR simulation operation inside a decommissioning reactor, an underwater verification test, and maneuver a caterpillar robot.

The deputy director, Mr. Yoichi Kashima and the staff took good care of us. We had a fruitful experience thanks to them. I would like to continue learning and broaden my knowledge about nuclear disasters.



Realizing my duty to pass it on

Haruka Sato

Soma High School, Freshman

I was five years old when the Great East Japan Earthquake occurred. Though I still remember some of the incidents, I don't remember many of them. I'm a freshman at Soma High School and I belong to the school's newspaper club. I decided to join the Journalism School program because I think it is important to pass down the stories of the disaster in order to prevent memories of the disaster from fading.

Robots are essential for decommissioning. Research and development of these robots are conducted at NARREC. VR simulations, full-size mock-up stairs and underwater testing are available at the facility. I tried operating robots and experienced a VR simulation. The deputy director,

Mr. Yoichi Kashima said, “Even though I wasn't directly involved with the nuclear accident, I still feel responsible as someone working in the field of atomic energy. I'm committed to carrying out the decommissioning and I'm doing everything I can for the revitalization of the region,” which shows his eagerness for revitalization and a sense of responsibility as an engineer. I felt that the revitalization is progressing steadily, thanks to those who have passion. I hear that some people, in cities like Tokyo, are living as if they have forgotten about the nuclear disaster. I strongly feel that we need to keep watching and pass on what has happened.



Understanding the responsibility for revitalization

Yui Honda

Ueda Elementary School, 6th grade

I was surprised to know that you can measure things with VR, see things in the dark, place something you want to see and move it. It was simulated down to the smallest details. This VR experience helped me understand what it is like inside the reactor.

The Full-scale Mock-up Test Building had an approx. 20-meter-long cloth shutter. It felt like a cloth for tents. Drones were there too and 16 cameras were mounted on it. A white, ball-shaped object was attached to the drone. The motion capture system, a rare system in

Japan, enables quantitative measurement of the movement of drones and robots in a wide spatial domain.

The deputy director, Mr. Kashima said, “As someone working in the field of atomic energy, I'm committed to revitalizing the region.” Mr. Nozaki started working here because he wanted to do something to help, and Mr. Ito thought working here would make himself useful. I learned that there are people outside of Fukushima who would come to help Fukushima revive.

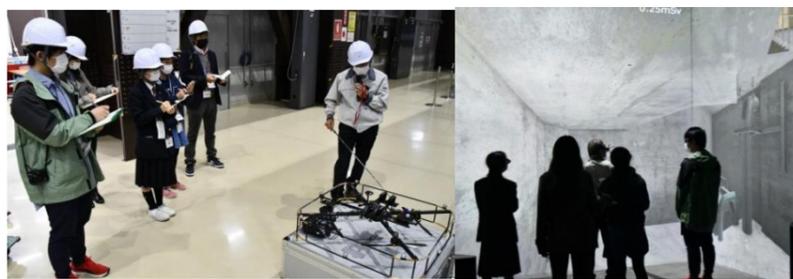
Decommissioning the nuclear power station from various perspectives



From the eyes of a graduate

As a graduate from the Journalism School program, I accompanied the teams to cover NARREC. This facility has a duty to decommission the reactors under the Fukushima Innovation Coast Framework. I was concerned whether or not I could properly support the reporters because I didn't know anything about technological developments or robots. However, the staff responded to our questions, explaining in detail, which made our day really fruitful.

The center contributes to the development of robots for decommissioning the Fukushima Daiichi Nuclear Power Station. The staff told us they work with a passion to help not only Naraha Town but also Fukushima Prefecture. One of the staff, Mr. So Shibamura (age 27) said, “I am happy to work. I can feel the local people's thoughts about decommissioning and revitalization first hand.” I think this is the best part of interviewing by getting to know the inside of people's minds, and not just the visible aspects such as technological development. During the interview, I started to wonder about the future of this facility. Once the decommissioning process is completed, what happens to this huge facility? Mr. Yoichi Kashima, the deputy director (age 60) simply answered, “It will be gone. It is actually a happy thing not to have this facility anymore because that means the decommissioning is done.” His words left a strong impression on me. While they wish for a world where there is no need for decommissioning facilities, they are confronted with decommissioning the reactors. Nuclear disasters are not just Fukushima's issue. I'd like to continue observing this topic from various viewpoints. (Natsumi Shinkai)



We made the newspaper

We'd like to thank all the staff at NARREC for taking time for us.
(From all members of the team)