



THE CANADA-JAPAN CO-OP PROGRAM



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THE UNIVERSITY OF BRITISH COLUMBIA



JFE Steel Corporation

Canada Japan Co-op Program
Student Experiential Report
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Bahar Heydari

The University of British Columbia – Okanagan
Electrical Engineering

JFE Steel Corporation

Steel Research Laboratory

1-1, Minamiwatarida-cho, Kawasaki-ku, Kawasaki, 210-0855, Japan

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1.0 Working at JFE Steel

1.1 History and Background of JFE Steel

JFE Holdings was formed in 2002 as a product of a merger and is the fifth largest steel manufacturer in the world. In 2001 NKK Corporation and Kawasaki Steel Corporation, which were the second and third largest steel manufacturers in Japan respectively, decided to merge in the following year forming JFE Steel.

JFE Steel is separated into three main areas; East Japan Works, Chita Works, and West Japan Works. There are five total steel research laboratories; Kurashiki, Fukuyama, Chiba, Keihin, and Chita. I worked at the Keihin Steel Research Laboratory located in Kawasaki. JFE Steel also has dozens of over-seas offices.

JFE Steel carries many steel products in various forms including but not limited to sheets, plates and shapes. They recently announced the “launch [of] Large-diameter welded steel pipe JV in UAE” to be used for transporting oil and gas. (JFE Steel Corporation, March 4 2015)

1.2 My Work at JFE Steel

I worked in the Instrumentation and Controls Department which included my supervisor, 2 of his colleagues, the department manager and myself. My work focused on evaluating phased array ultrasonic testing using ultrasonic simulation. Phased Array Ultrasonic Testing is a form of Non-Destructive Testing which, in this context, focuses on defect detection in steel pipes. Phased Array Ultrasonic’s are very versatile so they can also be used in medical applications and for testing the thickness of pipe or steel plates along with various other uses.

Phased array ultrasonic testing has many benefits, two of which being it’s ability to focus and steer by changing the time delay of each element on the probe, which is what my research focused on. During my work-term I created two different programs. The first one calculated the delay time for each element on a phased array probe for focusing on either the inner or outer diameter of a steel pipe. The user could input the pipe details and probe details and the program would output graphs, excel files, text files,

etc... containing delay time and other useful information. The second program calculated delay time as well but this time for steering a flat or unfocused beam.

Focusing and steering have many benefits. One major benefit of focusing is the improvement of signal-to-noise ratio thus making it easier to detect smaller defects. Steering is good for checking multiple areas of a pipe without having to physically move the probe.

My programs were supplemented with simulations done with a program called SWAN21. I would prepare simulations using this software and the delay time that my program calculated in order to confirm the accuracy of my programs results and also to assess how different probe sizes and pipe sizes affect the end result.

This work helped me develop skills in many different areas. I improved my technical skills such as programming and research. I also improved my critical thinking and problem solving skills. Along with this I also gained knowledge about phased array probes and ultrasonic testing which is used in many different fields and for many different applications.

Along with my work, my supervisor gave me opportunities to join him at exhibitions and meetings which helped me learn more about the technology, improve my Japanese language skills, and meet other people working in this field. Over the course of my work term, my supervisor, Mr. Yutaka Matsui, worked very hard to make sure that I learned a lot about my work. He took me to an exhibition, he gave me textbooks, and he gave me research papers to read. All of this helped my understanding of non-destructive evaluation and phased array ultrasonic technology greatly.

1.3 Work Life

My co-workers are very friendly and welcoming. When they found out that I loved trying new foods they introduced me to some very delicious food that I had never tried before, like Reimen, a Korean cold noodle soup which is perfect for the hot summer weather. Another co-worker planned a golf outing followed by a walk around a beautiful garden in Yokohama, a

truly unforgettable day! Along with all this, everyone is very happy to help with my travel plans. When the general manager found out that I love hiking he gave me many very useful tips on where to go and what to watch out for. He even showed me the trails for one particular hike on his maps and showed me many pictures of his hikes. My supervisor also does not hesitate to look over my plans and tell me what he thinks and what he likes, for example he told me about this historic Konpeito shop in Kyoto which I visited during the July long weekend. My experience in Japan is made so much better by my kind and thoughtful co-workers.



Figure 1: Welcome Dinner with Young Researchers

2.0 Dormitory Experience

My dormitory experience has been enjoyable. The room is spacious with a large bed, a desk, and a bathroom which contained a shower. The dormitory staff is also kind and we always exchanged an “Ohiou Gozaimasu” in the mornings. Along with the room, I also have all of my meals during the week provided for me. The cafeteria food was very good. I really enjoyed the days when they served curry and I greatly appreciated

the versatility in food, I don't think they served the same meal twice.

My daily commute was approximately 30 minutes one-way which I used as time to catch up on my reading. One of my first purchases in Japan was a kindle and I went through almost 20 books over the 4 months that I worked at JFE Steel! I really enjoyed having a half hour in the morning and a half hour in the evening to myself as this was the perfect time to relax before or after work.

I also enjoyed running in the evenings occasionally. Running is how I discovered the Kawasaki City Museum which is a 20 minute run from my dormitory. I enjoyed going to this museum whenever I had a chance to get a cup of coffee, look around, and get a little exercise in. The museum was also free except for their special exhibition so it was a great way to save a little money too.

There are also many restaurants nearby and it is easy to take the train to bigger stations where there are department stores and other exciting places. With Tokyo only 40 minutes away I never had a weekend where I wasn't sure what to do. One time I went to Motosumiyoshi Station to look into a painting class, and although the painting class was a little above my budget it was located in this great neighborhood. It was there that I found my favourite Soba shop.

3.0 Trips and Cultural Experiences

3.1 Weekend Trips

Since my location was good I didn't go on many long distance trips. I went on one trip to Kyoto/Osaka during the July long weekend and another trip to Nikko during Obon but aside from that I stayed mainly in my region.

The majority of my trips happened to be hiking trips. My first hike was Mount Takao which was extremely easy compared to the hikes that followed. The most challenging and most rewarding hike I did was the Tanzawa Mountain Ranges. A few fellow CJCP students and I hiked approximately 30 km, the majority of it ridgeline, covering 4 major peaks.

On the first day there was very dense fog and since we were hiking in the middle of rainy season we were expecting to have only fog for our entire hike. The first peak was Mount Tou-no-dake followed by Mount Tanzawa and we finished off that day with Mount Hiru-ga-take which is where we spent the night. At the peak of Mount Hiru-ga-take we were all surprised to see that all the clouds had cleared and we could see everything clearly including Mount Fuji at sunset. The next day was bright and sunny as well and before heading home we stopped by Mount Nabewari which is known for its delicious Udon. In the following weekend I hiked Mount Kumotori which is the highest peak in the Tokyo area. This hike was a completely different experience but very enjoyable as well.



Figure 2: Fuji viewed from Mount Hirugatake during Sunset



Figure 3: Udon at the top of Mount Nabewari



Figure 4: Near the Peak of Mount Kumotori

I hiked Mount Fuji with 16 other people, most of which were CJCP students, in the second week of August. In my opinion, it is a relatively easy hike with good preparation, although, I did not make it to the summit. At the final station one of the other students began to feel sick, since I had done lots of research on AMS (Acute Mountain Sickness) I stayed back with one other student to keep an eye on him. When symptoms began to worsen, we decided the best solution was to walk down the mountain with him so that it would not get any worse. Although it was not the hike I was expecting it was still extremely fun! The night sky was clear and I saw three shooting stars and still got to see the gorgeous sunrise from a little lower down the mountain. It just goes to show that sometimes helping a fellow hiker can be more rewarding than reaching the summit.



Figure 5: View while hiking down Mount Fuji

There are two more hikes planned for August, the first one being Mount Nantai in Nikko followed by Mount Akadake or Red Mountain which is a part of the Yatsugatake Mountain Range. Hiking was definitely the highlight of this trip and I would love to return to Japan and attempt to hike the remaining 96 famous mountains in Japan.

On weekends when I wasn't hiking I mostly enjoyed city life. I visited Tokyo several times and different locations in Kawasaki. I also managed to go to a couple of Onsen's during my stay in Japan, which is a very refreshing experience.

During the third weekend of July my company had a long weekend which I took advantage of by visiting Kyoto and Osaka. On that weekend a typhoon was in the forecast so I was expecting heavy rain and heavy wind. Fortunately, I arrived in Kyoto right when the typhoon ended and it was hot and sunny for the remainder of the weekend. I visited many temples and shrines, attended a tea ceremony, bought a Yukata and Obi, and explored Gion in the day and a half that I was in Kyoto. Once in Osaka I decided to start the half day in Shinsaibashi and Dotonbori. I went on a river cruise, had shaved ice and delicious street food and finished off the night with a relaxing hour at a Neko Café which had just gotten a kitten. My final day in Osaka was spent at Osaka Castle, Osaka National Museum of History, Sumiyoshitaisha Jinja, and Shitenno-ji which is one of Japan's oldest Temples. My favourite places were Kennin-ji because of the beautiful Zen garden and the tea ceremony which was also extremely relaxing.



Figure 6: Tea Ceremony in Kyoto



Figure 7: Pelican at Osaka Castle

3.2 Food

There are so many different types of food in Japan and they are all delicious. When I planned trips I always included food as part of the plan. One of my favourites for mid-July is Kakigori (shaved ice) and Reimen and with the weather only getting hotter and more humid I can see these dishes being favourites in August as well.



Figure 8: Kakigori and Yakitori in Osaka

One of my first trips in Japan was to Kamakura which had very memorable food. I tried Shojin Ryori which is traditional vegetarian food. The restaurant was beautiful with tatami mats and a small Japanese garden. The food was amazing as well; I was served two different types of tea and lots of small dishes with tofu and vegetables prepared in various different ways with different sauces.



Figure 9: Shojin Ryori in Kamakura

Another amazing meal I enjoyed was surprisingly served at a department store. It was a very hot day and I was walking around Shinjuku Garden and at noon I decided to escape the heat at the nearest department store and get something to eat. At the top level I got a boxed lunch which contained miso soup, some vegetables, and a rice bowl with sashimi and avocado and a sesame dressing on top.

In Kyoto I had lunch at restaurant that served Kaiseki Ryori on Hanamikoji Dori. The food was simple, elegant and very delicious. In Osaka I mainly had street food such as Yakitori, Okonomiyaki, or Ramen which I enjoyed greatly.



Figure 10: Kaiseki Ryori for lunch in Kyoto

3.3 Temples and Shrines

In Japan there are many beautiful temples and shrines. My first real experience was in Kamakura where I visited almost 10 temples and shrines in the one day I was there. My favourites were Meigetsu-in (The Temple of Hydrangeas) and Zeniarai Benten. Meigetsu-in was the most beautiful

temple I visited that entire day, it was covered in lots of different flowers, mainly hydrangeas as the name suggests. Zeniarai Benten is a shrine for the water deity. I cleaned my money in little bamboo baskets inside this cave by the shrine. This shrine felt mysterious and it was really fun to explore.

Another shrine that I will never forget is Mitsumine jinja which is found at the Peak of Mitsumine Mountain. A bus took us to Mitsumine jinja which is approximately 1012 m elevation. There is a trail that leads from Mitsumine jinja to the peak of Mount Kumotori. Mitsumine jinja was said to have been built by Prince Yamato Takeru which is a historical figure mentioned in Japan's oldest manuscript, Kojiki, which was written in 712 A.D. There is also a statue of him on the shrine grounds along with a soba shop and Onsen nearby. The shrine is said to have been founded around 150 A.D. which would make it almost 2000 years old. Mitsumine Jinja is the most beautiful and large shrine I have ever seen.

In Kyoto, my favourite temple was Kennin-ji because of its beautiful Zen garden and mysterious architecture. It was very fun exploring this temple. In Osaka I greatly enjoyed Sumiyoshitaisha Jinja because of its interesting architecture. This shrine was built before the influence of Chinese architecture so it differs greatly in appearance from the shrines I'd seen before this.



Figure 11: Kennin-ji in Kyoto

4.0 Recommendations and Reflections

4.1 Recommendations

This experience has been the best experience of my life so far. I have gained so much from this experience and I would recommend it to any student. It is very difficult to prepare before arriving in Japan, I read books,

studied the language, researched the culture and still felt completely unprepared. I think two recommendations I have for future CJCP students are to learn about the history of Japan and practice conversation before coming to Japan.

While travelling, locations have so much more meaning when you know the history behind it. Japan has a very long and complicated history so of course it is not possible to study and memorize it in depth. But if there are specific locations that are of interest I would definitely recommend looking into the history. Especially when hiking this is a good thing to do since many mountains have a lot of interesting mythological stories connected to them which makes the hike more interesting.

Hiking in Japan is very beautiful but it is important to research the safety as well. Some questions that you could ask are: “Is it okay to hike this mountain in running shoes?” or “Does this hike require any specialized gear or technical knowledge?” Finally it’s also important to keep in mind that a planned hike doesn’t always go as planned so the only thing that should be set in stone is returning safely with your fellow hikers.

I studied a lot of Japanese before leaving for Japan but I barely ever practiced conversation other than a simple introduction. I think it would have been beneficial to find a group of people on a meet-up website or from Japanese classes that also wanted to improve their conversation skills and talk with them in Japanese once a week. It definitely would have made my transition into life in Japan a lot easier.

4.2 Reflections

During this work-term I have gained greater insight on what I want to do with my career, I have gained a language skills which I plan to continue to develop, and I have gained many friends who I hope to see again when I return to Japan. I also have a greater appreciation for Japanese culture and language which I plan to continue to improve in the future.

I would like to thank the University of British Columbia, the Canada Japan Co-op Program, JFE Steel Corp. and all of my amazing colleagues

and supervisor for helping make this work term possible for me and for making it as good as it was. I am going to miss Japan and everyone I met here dearly.

References

JFE Steel (March 4, 2015). *Marubeni-Itochu Steel and Senaat to Launch Large-diameter Welded Steel Pipe JV in UAE*. Retrieved from JFE website: <http://www.jfe-steel.co.jp/en/release/2015/150304.html>