Malaysia's Young 'Nuclear Ambassadors'

by Mohd Daniel Davis

June 4—Like an old general addressing his army before an important battle, Prof. Noramly Muslim, father of Malaysia's 1970s civilian nuclear power program that has never been enacted, gave us a crystal-clear mission.

"Malaysia hopes to have nuclear power by 2021. You are now our ambassadors for nuclear power in this country. I want you to be proactive and become opinionated citizens who will speak up to the media by writing to the newspapers and magazines when people come out and attack nuclear power as unsafe. After this, I want you to give advanced reasons rather than just layman reasons for the usage of nuclear power in this country."

Professor Noramly gave the the closing speech at the 2nd Nuclear Power and Engineering Summer School program, held May 17-27, in collaboration with National University of Malaysia (UKM) and the Korean Advanced Institute of Science and Technology (KAIST). In the 1970s, Noramly was the founding director general of the Pusat Penyelidikan Atom Tun Ismail (PUSPATI), now renamed the Nuclear Malaysia Agency. Back then, Malaysia's brightest students were sent overseas for training in nuclear science and engineering. This first generation of nuclear experts is now retiring.

Now, here we were, at the Nuclear Summer School, a fresh generation of mostly young, under 35, working professionals, who hope to further their studies at the world's top nuclear universities.

Three professors from KAIST, and one from the Korean Institute of Nuclear Safety (KINS), were invited to UKM to lecture on nuclear reactor design, fuel, instrumentation, and radioactive waste management. The program attracted numerous professionals from Malaysia's research and energy industry, including, Tenaga Nasional Berhad (Malaysia's main electricity supplier), Nuclear Malaysia Agency (responsible for handling Malaysia's experimental reactor), Atomic Licensing Board, and other government and private educational institutions.

Malaysia, sandwiched between Thailand and Singapore, has long prided itself as being a leader among developing countries, demonstrating how to progress in a multicultural society without racial conflict. In the 1970s, when oil prices were soaring, Malaysia initiated its own civilian nuclear power plan under the umbrella of President Eisenhower's 1953 Atoms for Peace program. Its first experimental nuclear reactor, Triga, was built in the early 1980s. The 1-MW reactor has been primarily used for isotope production for agricultural and medical use, and research into radioactive applications of fertilizers, crops, and the study of soil sedimentation.

Today, with no coal reserves, oil reserves expected to last for only five more years, and natural gas a bit longer, Malaysia is looking back wistfully at the shelved nuclear program that Noramly and his colleagues initiated nearly 40 years ago.

South Korea Leads the Way in SE Asia

Few could have believed that South Korea could beat out the United States, France, and Japan last year for a $20 billion contract to build state-of-the-art 1,400-MW nuclear power plants in the United Arab Emirates by 2020. It was a first for the South Koreans. How could this small Asian country have beaten traditional nuclear heavyweights? South Korea has come a long way since its first 563-MW Kori-1 reactor in 1978. It now has 20 nuclear power plants, which produce 40% of the nation's total electricity. This has sparked heightened interest in other developing countries, especially, in Southeast Asia, where Korean-built nuclear plants are cheaper. It costs only $3 billion for the South Koreans to build a unit, while, the cost for United States to build one will be $5-6 billion.

What about the doubts that many people express about "nuclear waste"—fears which largely stem from the hysteria of the anti-nuclear crowd and the mass media hype about Chernobyl and Three Mile Island?[1] I am reminded of the powerful message that Prof. Jong Kim of KAIST gave a year ago, during a public lecture at UKM. South Korea initially had problems finding a suitable place for the nuclear waste from their power plants. Jong explained:

"In the end we simply asked any areas which wanted to have the nuclear waste facility to submit their entries. Four areas submitted their entries; the winner went to the area with an 80% resident approval for building the nuclear waste management facility. The technical aspect

1. For further discussion about the safety of nuclear power, see: Zbigniew Jaworowski, M.D., Ph.D., D.Sc., "Lessons of Chernobyl: Nuclear Power Is Safe," *EIR*, May 7, 2004.

Courtesy of KAIST

Malaysia's new generation of "nuclear ambassadors" gather at the 2nd International Nuclear Power Science and Engineering School May 17-27. They hope to bring Malaysia into the forefront of nuclear nations.

of it had been solved long ago. It is relatively safe. If it wasn't safe why would South Korea build not only one but 20 nuclear power plants? What is left for other countries is only the political will power to do so. . . ."

To date, people who live in areas that operate a nuclear power facility are healthy and happy, as is evident in France, for example, where over 70% of the energy is generated by nuclear power.

As a physics undergraduate, and the youngest "nuclear ambassador" attending the summer school program, I feel the following points needs to be addressed with urgency:

• With nuclear power, the Malaysian monthly household electricity bill will be reduced from the average RM100-200 per month, to an average of only RM40-50 per month. This is because nuclear power plants can generate a stable base load of electricity 24 hours, 7 days a week, with shutdowns only every 18 months to service and re-fuel, during their 50-60 year lifetime. Electricity generation using nuclear power costs only $.39 per KW-hour versus $.54 for coal, $1.47 for natural gas, and $1.95 for oil.

• Nuclear power produces 10 grams per KW-hour of CO_2 (this figure, from the South Koreans, includes uranium ore mining and nuclear plant construction), against 991 grams per KW-hour of CO_2 produced using coal, and 782 grams of CO_2 for oil. So for those worried about CO_2 emissions, nuclear has the least greenhouse gas emission in the energy industry.

As young nuclear ambassadors, how then will we win over other youth to take up nuclear as a career? We must catch them in their final school years, and inspire them with the future of a Nuclear Malaysia. But this will not happen unless Malaysia makes a clear decision to go nuclear. The youth are not stupid. They have seen their parents' generation, which answered the nuclear call in the 1970s, rot in the government nuclear establishments, without being allowed to produce a single kilowatt of electricity or to launch hi-tech industries as South Korea has done. Until Malaysia makes a clear commitment to go nuclear, the youth will boycott nuclear as having no future in Malaysia.

Malaysia often brags about being the role model for other developing countries. This is only partly true (with its successful urbanization and some low-tech industries). But it is impossible to live and raise a family on the low salaries most young people receive, even as graduates, without considerable financial assistance from their parents. But, by partnering with South Korea in nuclear power plants and other technologies, such as cars and electronics, Malaysia can achieve the stated government aim for a high-wage, hi-tech transformation of the economy. South Korea stated loud and clear at the summer school, that it is eager to work alongside Malaysia.

In the words of Prof. Kun Jai Lee, a senior professor from KAIST, in his closing speech: "Korea will gladly help Malaysia to build its first nuclear power plant. Since your government has stated that it aspires to have the first nuclear power plant by 2021, we don't have much time to waste!"

As Malaysia's newly appointed "nuclear ambassadors," we were impressed. This is an offer from our Asian technological "big brother," which has proved to the world its mastery in safely harnessing nuclear power, that is simply too good to refuse. What on Earth is stopping Malaysia from making the simple decision to *Go Nuclear?* Half of Malaysia's population, like me, is under 23 years old. We want an answer and a future.