Nuclear Latency (NL) Dataset
Country Coding Sheets

TAIWAN
COW COUNTRY CODE: 713

List of Country's Enrichment and Reprocessing (ENR) Facilities

1. Institute for Nuclear Energy Reaction (INER) Reprocessing Facility I
2. Institute for Nuclear Energy Reaction (INER) Reprocessing Facility II
3. Institute for Nuclear Energy Reaction (INER) Reprocessing Facility III

Note: There was reportedly centrifuge-related research in Taiwan in 2004.[1] We have found no clear evidence that Taiwan attempted to enrich uranium with centrifuges (even if they were interested in doing so), so we excluded these activities from the dataset.

Detailed Facility-Specific Information and Sources

1. Institute for Nuclear Energy Reaction (INER) Reprocessing Facility I

a. ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).

Reprocessing (hot-cell).

b. Facility size (laboratory, pilot, commercial).

Laboratory.

c. Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.

Construction on the facility began in 1970 with an initial expected completion date of 1976. The facility conducted cold testing in 1975 or 1976 and operated until 1977 (Albright and Gray 1998).[2] At that time, the hot cells were reportedly used for the study of spent fuel without further work on plutonium separation. Reporting in the mid-2000s suggests that plutonium-related experiments in Taiwan may have continued until the mid-1980s.

d. Was the facility developed covertly? If so, identify years that facility was covert.

[1] Kemp, R. Scott. 2014. "The Nonproliferation Emperor Has No Clothes." *International Security* 38, no. 4: 45.
[2] Alan (2011, 21) stated Burr communicated that Taiwanese officials were planning on building a reprocessing facility in November of 1972.

Yes, the facility was developed covertly. Recently declassified Department of State documentation suggests that the US government had an understanding of the facility and the complex procedures to procure additional materials.

e. Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.

Yes, the facility and the fuel were under IAEA inspections. Taiwan is not a member state of the NPT (after China took its spot), but it has had a non-governmental arrangement with the IAEA since 1971. The IAEA identified the discrepancy in fuel rods that enabled identification of reprocessing experiments. IAEA inspectors identified the facility's capacity to produce plutonium metal. The facility was separated into two sections, one military and one civilian; however, there was no material barrier between the locations. IAEA inspectors were responsible for identifying the discrepancies between safeguarded fuel rods used in the research reactor.

f. Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.

No.

g. Did the facility have a military purpose?

Yes, the facility was part of Taiwan's nuclear weapons program. The funding and the location of the lab were within the military portion of the facility.

h. Was the facility multinational? If so, identify the other countries that were involved.

No.

i. Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.

Taiwan received this plant from the French firm Saint Gobain. It may also have received some aid from West Germany.

j. Sources:

Albright, David and Corey Gay. 1998. "Taiwan: Nuclear Nightmare Averted." *Bulletin of the Atomic Scientists.* 5(1): 50-60.

Associated Press. 2004. "Taiwan Said to Conduct Plutonium Tests in 1980s." October 14.

Burr, William. 1999. “New Archival Evidence on Taiwanese "Nuclear Intentions" 1966-1976.” National Security Archive. http://www2.gwu.edu/~nsarchiv/NSAEBB/NSAEBB20/. Accessed 07/06/2015.

Knapik, Michael, Donald Shapiro and Gamini Seneviratne. 1998. “US Pleased Taiwan is Shutting Down Reactor Producing Good Quality PU.” *Nuclear Fuel.* 13(7): 12.

Kogan, Eugene B. 2013. “Proliferation Among Friends: Taiwan’s Lessons from 1970’s-80’s.” Nuclear Studies Research Conference. http://belfercenter.ksg.harvard.edu/files/kogan-nsri-oct-2013.pdf. 14.

Kroenig, Matthew. “Importing the Bomb: Sensitive Nuclear Assistance and Nuclear Proliferation.” The Belfer Center. http://belfercenter.ksg.harvard.edu/files/uploads/Kroenig_Importing_the_Bomb.pdf. Accessed 07/06/2015. 29.

Nuclear Threat Initiative. 2015. “Taiwan.” http://www.nti.org/country-profiles/taiwan/. Accessed 07/06/2015.

Schumacher, Edward. 1976. “Taiwan Seen Reprocessing Nuclear Fuel: Taiwan Said to Be Reprocessing Nuclear Plant Secretly.” *The Washington Post.* August 29, 1976.

Spector, Leonard S. 1984. *Nuclear Proliferation Today*. New York City, NY: Vintage.

Weissman, Steve and Herbert Krosney. 1981. *The Islamic Bomb: The Nuclear Threat to Israel and the Middle East*. New York City, NY: New York Times Books.

Wikileaks. 1975. “Cable from US Mission to EU to Energy Research and Development Administration IAEA and Secretary of State.” April 15 1975. https://www.wikileaks.org/plusd/cables/1975ECBRU03338_b.html. Accessed 07/06/2015.

2. Institute for Nuclear Energy Reaction (INER) Reprocessing Facility II

a. ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).

Reprocessing (hot-cell).

b. Facility size (laboratory, pilot, commercial).

Laboratory.

c. Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.

Albright and Gay (1998, 57) report that a second, smaller laboratory-scale reprocessing facility was developed at this location. There is considerable uncertainty surrounding when this facility operated. We code it as being operational from 1976 to 1977.

d. Was the facility developed covertly? If so, identify years that facility was covert.

Yes, the facility was developed covertly.

e. Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.

Yes, the facility and the fuel were under IAEA safeguards. The IAEA inspected the facility in 1976 and found no evidence that the facility had handled irradiated material.

f. Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.

No.

g. Did the facility have a military purpose?

Yes, the facility was part of Taiwan's nuclear weapons program. The funding and the location of the lab were within the military complex portion of the facility.

h. Was the facility multinational? If so, identify the other countries that were involved.

No.

i. Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.

A Norwegian who had been involved in Norway's separation program was identified as providing direct assistance but no further identifying criteria was provided. It is not clear that this aid was state-sanctioned, however.

j. Sources:

Albright, David and Corey Gay. 1998. "Taiwan: Nuclear Nightmare Averted." *Bulletin of the Atomic Scientists.* 5(1): 50-60.

Burr, William. 1999. "New Archival Evidence on Taiwanese "Nuclear Intentions" 1966-1976." National Security Archive. http://www2.gwu.edu/~nsarchiv/NSAEBB/NSAEBB20/. Accessed 07/06/2015.

Kogan, Eugene B. 2013. "Proliferation Among Friends: Taiwan's Lessons from 1970's-80's." Nuclear Studies Research Conference. http://belfercenter.ksg.harvard.edu/files/kogan-nsri-oct-2013.pdf. 14.

Nuclear Threat Initiative. 2015. "Taiwan." http://www.nti.org/country-profiles/taiwan/. Accessed 07/06/2015.

Spector, Leonard S. 1984. *Nuclear Proliferation Today*. New York City, NY: Vintage.

Weissman, Steve and Herbert Krosney. 1981. *The Islamic Bomb: The Nuclear Threat to Israel and the Middle East*. New York City, NY: New York Times Books.

3. Institute for Nuclear Energy Reaction (INER) Reprocessing Facility III

a. ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).

Reprocessing.

b. Facility size (laboratory, pilot, commercial).

Laboratory.

c. Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.

Construction of the facility began in 1987 and construction ended in 1988. Albright and Gay (1998) state that no plutonium was separated before it was shut down.

d. Was the facility developed covertly? If so, identify years that facility was covert.

Yes, the facility was developed covertly. Once the facility was discovered the United States put considerable pressure on Taiwan to close the facility.

e. Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.

Yes, IAEA inspectors are allowed in the country and inspectors actually discovered the discrepancy in fuel rods. Taiwan is not a member state of the NPT (after China took its spot), but it has had a non-governmental arrangement with the IAEA since 1971. The safeguards are governed by a US-Taiwan agreement. Once the facility was revealed the US applied considerable diplomatic pressure.

f. Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.

No.

g. Did the facility have a military purpose?

Yes, the facility was part of a nuclear weapons program launched in 1964 in response to China's nuclear detonation. Efforts to separate plutonium may also have been a strategic calculation to force policy issues with the United States.

h. Was the facility multinational? If so, identify the other countries that were involved.

No.

i. Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.

No evidence of foreign assistance found, though there were previously constructed facilities at INER that benefitted from foreign assistance.

j. Sources:

Albright, David and Corey Gay. 1998. "Taiwan: Nuclear Nightmare Averted." *Bulletin of the Atomic Scientists.* 5(1): 50-60.

Burr, William. 1999. "New Archival Evidence on Taiwanese "Nuclear Intentions" 1966-1976." National Security Archive. http://www2.gwu.edu/~nsarchiv/NSAEBB/NSAEBB20/. Accessed 07/06/2015.

Federation of American Scientists. **"**Taiwan Nuclear Weapons." http://www.fas.org/nuke/guide/taiwan/nuke/. Accessed 07/06/2015.

Kogan, Eugene B. 2013. "Proliferation Among Friends: Taiwan's Lessons from 1970's-80's." Nuclear Studies Research Conference. http://belfercenter.ksg.harvard.edu/files/kogan-nsri-oct-2013.pdf. 14.

Kroenig, Matthew. "Importing the Bomb: Sensitive Nuclear Assistance and Nuclear Proliferation." The Belfer Center. http://belfercenter.ksg.harvard.edu/files/uploads/Kroenig_Importing_the_Bomb.pdf. Accessed 07/06/2015. 29.

Nuclear Threat Initiative. 2015. "Taiwan." http://www.nti.org/country-profiles/taiwan/. Accessed 07/06/2015.

Wikileaks. 1975. “Cable from US Mission to EU to Energy Research and Development Administration IAEA and Secretary of State.” April 15 1975. https://www.wikileaks.org/plusd/cables/1975ECBRU03338_b.html. Accessed 07/06/2015.

Zentner, M.D., G.L. Coles, and R.J. Talbert. 2005. “Nuclear Proliferation Technology Trends Analysis.” Pacific Northwest National Laboratory. Report 14480.