Nuclear Latency (NL) Dataset
Country Coding Sheets

CZECH REPUBLIC (1993-present); CZECHOSLOVAKIA (1939-1993)
COW COUNTRY CODE: 316; 315

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

1. Nuclear Research Institute of Czechoslovakia, Rez

Detailed Facility-Specific Information and Sources

1. Nuclear Research Institute of Czechoslovakia, Rez

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

Reprocessing (UNEX process).

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.

The construction start year could not be determined. The facility is coded as operating from 1977 to 1998. These dates only refer to the period in which separation testing was done at Rez.

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

No, the facility was not covertly developed.

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

The facility would have been safeguard from 1997 onward per INFCIRC/541. The Czech Republic had not ratified the NPT until that time. Additional protocols were ratified in 2002.

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

No, reprocessing ended prior to the Czech Republic joining the Euratom Treaty in 2004.

g. *Did the facility have a military purpose?*

It is possible that the facility provided support for military related research. However, there is no evidence that this plant was part of a nuclear weapons program.

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

No, the facility was operated by Czechoslovakia.

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

Yes. Czechoslovakia's dry reprocessing technique (FREGAT-2) was developed in the 1970s and 1980s with assistance from the USSR. Following an agreement between the two countries, the USSR worked on developing technology for fuel element decladding and the transformation of fuel into a powder. At the same time, Czech organizations worked on the fluorination of the fuel and separation of uranium and plutonium fluorides. It was agreed that both countries would work on purification, with the USSR focusing on plutonium purification and Czechoslovakia focusing on the purification of uranium. While Jan Uhlir notes that most of the work on the line was done by Czech organizations, principally the Nuclear Research Institute Rez, it seems that the Soviets did play a part as well.

j. *Sources:*

Hibbs, Mark. 1992. "Czech Fuel Cycle Taking Shape, Economics Precludes Reprocessing." *Nuclear Fuel.* 17(12): 8.

Holgye, Z. 1983. "Separation of Plutonium from Bones by Coprecipitation with Bismuth Phosphate." *Fresenius Z Annual Chemistry.* 315: 247-248.

Uhlir, Jan, "An Experience on Dry Nuclear Fuel Reprocessing in the Czech Republic." Nuclear Research Institute Rez plc. http://www.oecd-nea.org/pt/docs/iem/mol98/session2/SIIpaper9.pdf. Accessed 06/09/2015. 2.

Uhlir, Jan, Miloslav Hron, Vojtech Priman, Zdenek Fredjtich. "Current Status of Czech R&D Program in Partitioning and Transmutation." OECD Nuclear Energy Agency.

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

—. "Nuclear Energy: Fuel of the Future." http://blogs.princeton.edu/chm333/f2006/nuclear/05_reprocessing/possible_methods_of_reprocessing/.

—. "US Russian Joint Coordinating Committee for Environmental Restoration and

Waste Management." http://www.jccem.fsu.edu/success_unex_1.cfm. Accessed 06/08/2015.

Additional Facility:

*This facility is not counted as an ENR plant, but the original documentation is included here for reference.

Molten Salt Reactor and Reprocessing

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.*

   The facility started construction in 2002 with experimentation beginning in 2003.

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

   No, the facility was publicly announced.

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

   The facility has been under safeguards since construction. The Czech Republic negotiated a safeguard agreement in 1997 (INFCIRC/541).

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

   Yes, the facility has been under Euratom safeguards since 2004.

g. *Did the facility have a military purpose?*

   It is doubtful the facility is used for weapons purposes according to the PNNL report. The report notes, however, that the process could effectively be used to extract plutonium.

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

No, the facility is owned and operated by the Czech Republic.

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

Yes, the Russian's have provided the Czech Republic with considerable assistance and conducted joint research on this type of reprocessing. The US provided fluoride salt for Czech experiments. Russia and the United States have provided assistance in the project. Japanese company International Thorium Energy & Molten-Salt Technology partnered with the Czech Republic to develop the project.

j. Sources:

Nuclear Research Institute Řež plc, 2002. "Presentation at GEDEON-PRACTIS Meeting Chateau de Caderache." http://www.gedeon.prd.fr/ATELIERS/AT19_20_06_2002.

Nuclear Research Institute Rez plc. "Presentation." http://www.polsca.be/ppt/090609/OU.pdf. Accessed 07/21/2015.

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