Transport of radioactive materials in Slovakia

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Introduction

- Transport of nuclear materials in an industrial extent started in Slovakia in seventies within commissioning of the first nuclear power plant A-1 at Jaslovské Bohunice.
- Transports were approved by the former Czechoslovak Atomic Energy Commission (ČSKAE) using IAEA recommendations incorporated into Safety Series No. 6.
- Approval for transport of nuclear materials and use of transport means was required.
- All transport activities in this period, mainly transport of fresh fuel assemblies for WWER-440 reactors at Jaslovské Bohunice site from the USSR and spent fuel assemblies to the USSR, respectively, were analyzed and decisions made on the base of IAEA Safety Series No. 6.
Legislative Framework

- After dissolution of former Czechoslovakia in 1993 activity in the area of transports of nuclear material is regulating the Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR).
- Moreover its competency was extended on transports of radioactive wastes originating in nuclear facilities and of institutional radioactive wastes prepared for disposal.
- IAEA Safety Series No. 6 have been used as a guiding document in the area of transport of nuclear materials and radioactive wastes.
- On 1 December 2004 the Act No. 541/2004 on Peaceful Use of Nuclear Energy which more comprehensively defined rights and responsibilities of subjects participating in utilization of nuclear energy, including position of the ÚJD SR, entered into force.
Legislative Framework continued

- According to § 15 of the Act nuclear materials may be transported only with approval of the ÚJD SR and only in transport means/packages approved by the ÚJD SR.
- On 1 March 2006 the ÚJD SR succeeded to issue the Regulation No. 57/2006 on Transport of Nuclear Materials and Radioactive Wastes.
- The regulation describes in details conditions for the safe transport of this kind of materials and covers also transport inside the territory of nuclear facilities (except of interior of buildings).
- The scope is reduced to nuclear materials and to those radioactive substances that could be produced as wastes from nuclear facilities.
The safety documentation that is required as a part of an application for the ÚJD SR approval should consist of set of measures to assure nuclear and radiation safety during transport as well as of transport arrangement and emergency procedures prepared usually by carrier.

The application should also contain the package certificate issued or validated by the ÚJD SR.

The regulation also defines requirements on physical protection of transport and in this part it is reflecting the IAEA recommendations incorporated into INFCIRC/225/Rev. 4 “Physical Protection of Nuclear Materials” and some other requirements formulated by involved Slovak ministries in 1995 as an Agreement on Physical Protection of Nuclear Material Transports and tailored to specific conditions in Slovakia.
The Slovak Republic as a member of all important international conventions in the area of transport of dangerous goods has taken documents like RID, ADR and so on into its national legislation over.
Transport of radioactive materials

- Periodical transports of nuclear material:
  - Import of fresh fuel assemblies from the Russian Federation for 2 reactor units WWER-440 in Bohunice NPP and from 1998 also for 2 reactor units WWER-440 in Mochovce NPP,
  - Transport of spent fuel assemblies from Mochovce and Bohunice NPPs to the Interim Spent Fuel Storage (ISFS) at Bohunice site,
  - Transfer of uranium concentrate via Slovakia.

- Radioactive waste transport as a part of radioactive waste management system enables linking among its individual elements.

- In this area seven types of transport equipment were approved by ÚJD SR as well as respective transportation permits were issued for transport of different radioactive waste among individual treatment and conditioning technologies.
Transport of radioactive materials continued

- Since 2000 transports of low and intermediate level radioactive waste packages from Bohunice site to the Mochovce near surface disposal facility have been launched.
- At present the transport by road is used for all types of radioactive waste. Combination of rail and road transport modes is under preparation for transport of radioactive waste to repository.
- This mode of transport is considered as more safe and provides for increasing of transport capacity.
- In recent history some important international transports of spent nuclear fuel have been accomplished:
  - in 1995 several hundred partially irradiated WWER-440 assemblies were transported from Germany to Hungary via Slovakia,
Transport of radioactive materials
continued

- In 1995 – 1997 more than one thousand spent fuel assemblies were transported from the ISFS Bohunice to Dukovany NPP in the Czech Republic. Containers C-30 and CASTOR 440/84 were used,
- In the period 1997 - 1999 last 132 spent fuel assemblies from the shut-downed A-1 NPP at Bohunice site were transported in 9 transports to the Russian Federation using modified transport containers T-15.
- In 2007 fresh and spent highly enriched fuel from research reactor in Řež, Czech Republic was transported from Czech Republic to Russian federation via Slovakia.
- Almost all transports (95 %) are carried by the Slovak Railways and physical protection is assured by the Police Corps (S.W.A.T. and Railway Police) of the SR in cooperation with security guards in transports of fresh fuel inside NPPs and with the Police of the SR in transports of spent fuel, respectively.
Transport of radioactive materials
continued

- Since 2014 due to unstable situation in Ukraine some fresh fuel transports were carried out from Russian Federation by air and by road.
- The ÚJD SR carries out inspections of transports of spent nuclear fuel and unirradiated nuclear materials.
Transport of radioactive materials
continued

- The ÚJD SR inspectors are concentrating on completeness of transport documentation, measures of physical protection, authorization of persons involved, and also surface contamination of randomly selected wagons and packages and radiation level is measured.
- A certificate for package design is issued after validation of certificates issued by competent authorities of the country of the package design origin.
- The certificate issued by the ÚJD SR is usually valid five years or its validity is adjusted according to the original certificate.
- If some requirements on safe transport are not fulfilled the ÚJD SR approval is issued in the form of special arrangements and its content is consulted and agreed with competent authorities of involved countries.
Transport of radioactive materials continued

- In this way the ÚJD SR issued approval for transport of spent fuel assemblies temporarily stored at the ISFS Bohunice to NPP Dukovany in the Czech Republic in containers C-30 with certificate expired in 1996 issued by a competent authority of the former GDR.
- Conditions of this approval were consulted with the competent authority of the Czech Republic.
- Transport container C-30 is approved by the ÚJD pursuant to safety documentation.
Transport container C-30
Transport container C-30
Transport container TK-S55
Conclusion

- As far whole transport activities were carried out safely without any accidents having negative impact on environment and personnel.
- Such positive status is a result of very responsible attitude of all involved subjects namely carriers and consignors as well as competent authorities that have been requiring strict fulfillment of conditions and criteria for safe transport of radioactive materials.
- Since the beginning we have complied the respective international requirements and recommendations.
- Throughout the history of radioactive material transports in Slovakia these requirements have been based on the IAEA recommendations which were finally incorporated in 2006 into Regulation No. 57/2006.
Conclusion
continued

- As a member of the European Union Slovakia has to comply the requirements given by the European legislation.
- These requirements are implemented in new Atomic Law No. 541/2004.
Thank you for your attention!