

Instruction Scheme for the Transport of Uranium Materials

R. Christ

Nuclear Cargo & Service GmbH

E.S. Freiman

Ministry of Railways, Institute VNIIGH

G. Schäfer

RSB Logistic GmbH

S.M. Semin-Vadov

Techsnabexport Co.

B. Vels

Uranerzbergbau GmbH

INTRODUCTION

In December 1990, the European Council agreed to support the economic reform initiatives which the States of the former Soviet Union were developing at that time. The so-called TACIS program (Technical Assistance to the Common-wealth of Independent States) was launched. Main areas funded are, for example, private sector development, development of energy, transport and telecommunications infrastructures, environment and nuclear safety. In the sector of nuclear safety, special projects for improvement are funded, like on-site assistance at power plants, design safety analyses, waste storage, and last but not least, projects related to the transport of nuclear materials.

The project described here was initiated by the European Commission in 1992 and ended in 1994. It had the aim to analyse and where necessary to improve the system for the transport of uranium materials in the form of uranium concentrates and UF₆. Project partners were three German companies on the Western side: NCS Hanau, RSB Logistic, and Uranerzbergbau GmbH, Wesseling. On the Russian side, two organizations were involved: Techsnabexport Moscow, an uranium export organization, and the Russian Railways, represented by experts from an institution of the railway organization responsible for dangerous goods transportation and the relevant regulations.

PROJECT APPROACH

The project was divided into three principal steps:

- evaluation of the present situation
- exchange of information
- establishing a handbook for the safe transport of uranium in the form of ore concentrates and UF₆.

EVALUATION OF THE PRESENT SITUATION

In the beginning the acquisition of information was impeded by the reluctance of local personnel. The reason for this has to be seen in the long history of secrecy in the countries of the former Soviet Union.

Although information on uranium transport facilities, operations, and organization is available now, detailed data on specific issues are still difficult to obtain. The regulatory situation can be summarized as follows: National regulations of Russia are not fully in compliance with international regulations. Russian specialists are, of course, aware of this fact. The process of reviewing the national regulations has been started. During a transition period national and international, i.e., export, transports of uranium are treated differently.

EXCHANGE OF INFORMATION

Technical Meetings

Seventeen technical meetings between Russian specialists and German consultants were held. Most of the meetings took place in Moscow, and others were combined with site visits to Russian uranium transport and nuclear fuel cycle facilities. One meeting was held at the IAEA in Vienna.

Main topics in the discussions were technical questions concerning the present situation of uranium transport in the CIS, transport means, safety, regulations, transit storage, responsibilities, etc. Next to these, administrative questions concerning the organization of seminars and site visits, the exchange of literature and technical documents, the preparation of the handbook, etc., were discussed.

Seminars on Uranium Transport

In the project period, two seminars on uranium transport have been organized in Voronovo near Moscow. The seminars were an essential part of the project. They are the best way to reach specialists from the different facilities and to introduce state-of-the-art technology and know-how.

Main subjects treated in the course of the seminars were:

- Transport regulations
- Packaging
- Radiation protection
- Accident preparedness
- Planning and organization of transports
- Insurance matters and legal aspects
- Distribution

Site Visits of CIS Specialists in Germany

In September 1993, technical site visits of facilities for transportation of nuclear material in Germany were organized for a group of specialists. The participants were transportation managers of nuclear facilities and representatives of governmental organizations. The targets of the visits, which were part of the training activities, were fully achieved:

- Introduction of the German nuclear industry, particularly to the nuclear transportation facilities
- Demonstration of routine handling of nuclear transports
- Information about emergency response systems
- Explanation of the organizational structures of nuclear transport companies.

Literature

Availability of Western literature is one of the problems to be solved in the future. The contribution of the German consultants was to establish a list of recommended literature related to nuclear transport and associated subjects. The list comprises 71 titles. A selected number of titles has been purchased and handed over to the Russian specialists. The language barrier still remains however. Only a limited number of titles (such as some IAEA documents) are available in the Russian language.

HANDBOOK "INSTRUCTION FOR URANIUM TRANSPORT"

In an early stage of the information exchange, the idea came up to concentrate all the information into a handbook. Consequently the contents of such a handbook was drafted by the project partners, and a list of 19 chapters was agreed upon. In a further step, writing the chapters was split between the partners.

It was not an easy job to coordinate the activities of five German and three Russian authors, taking into account the different languages and the not-so-perfect communication lines between Russia and Germany. However, due to the good will and efforts from both sides, the task was accomplished in almost the scheduled period of time.

The handbook concentrates on the following subjects:

- In respect to materials, it is intended for uranium in the form of uranium concentrates and UF₆ both natural and low enriched.
- The handbook relates to the export of these materials from Russia.

It is written for use by Russian consignors, carriers, export organizations, and supervisory bodies.

As concerns the organization of the handbook, the following sequence is applied in the chapters where appropriate:

First the relevant points of the IAEA Regulations are given with the original numbering of IAEA Safety Series No. 6 for precise reference. Next, transport regulations in the Russian Federation are mentioned, followed by international mode-specific regulations and special requirements in importing countries. Technical details are given in appendices to the relevant chapters.

The IAEA was supplied with a complete copy of the draft version of this handbook. In its response, IAEA stated that "The Handbook seems to be a complete reference of all applicable requirements needed for the shipment of uranium concentrates and uranium hexafluoride." The authors wish to thank the IAEA for the cooperation and comments. All comments were completely integrated in the final version.

In view of outdated regulations in Russia, the handbook includes the latest status of international transport regulations and makes available comprehensive information about state-of-the-art technology and Western standards.

CONCLUDING REMARKS

1. The handbook is a good starting point for the application of international standards in Russia.
2. Though designed specifically for the export of uranium materials from Russia, the handbook will also influence national transports.

3. It is necessary to transfer and adopt the results of the project to the other uranium-producing republics of Ukraine, Kazakhstan, Kyrgystan and Uzbekistan. For this purpose the Commission of the European Community has launched a small follow-up project, which will be performed by the same group of German companies together with specialists from the mentioned countries.