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WNU SUP –Efficient Capacity Building Tool In U-Production Cycle

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INTRODUCTION

The World Nuclear University - School of Uranium Production (WNU SUP) international training centre was founded in 2006 and is operated by the DIAMO State Enterprise under the auspices of the World Nuclear University in London and in collaboration with OECD/NEA and IAEA. Making use of knowledge and equipment of the DIAMO State Enterprise and the connections it has with universities, research institutions, supervisory authorities and other experts from the Czech Republic and abroad, the International Training Centre develops and presents schemes focused on professional training throughout the range of aspects of uranium production, be it deposit surveys and extraction using various means, treatment of uranium ores, environmental protection and protection of the health of workers, and even removal of the consequences of mining operations.

DIAMO State Enterprise was chosen to be the seat. The decision-making process took into account the extensive experience of the staff of this state-owned company in the underground acid uranium leaching method, one that can be used with success even at new sites abroad. Furthermore, the DIAMO State Enterprise offers extensive experience in remediating sites after conventional exploitation and treatment of uranium ores, remediating the bedrock environment after chemical extraction of uranium, treatment of mine water, radiation protection of staff and populations, environmental protection, etc. In addition to these technical aspects the DIAMO State Enterprise also has the option to arrange relaxation and learning events for course participants.

MOTIVATION AND MISSION

The increase in the global demand for uranium, particularly in countries where uranium mining is on the rise such as China and India, Pakistan, Brazil, Argentina and others, has led to an increase in global market prices and a re-evaluation of the stock of the material. Contrasting to the above is the significant shortage of skilled professionals in uranium mining and processing observed in the last twenty years.

In recent years, termination of uranium mining has been under way around the world. Many countries need to deal with the disposal and remediation of the consequences of uranium mining, which includes removal of old uranium burdens such as deep mines, ISL mines, treatment plants and tailings ponds. This sector is also experiencing a shortage of qualified experts globally.

In accordance with the fact that the proper management of uranium production requires skilled personnel and a broad dissemination of scientific, engineering and social knowledge, WNU School of Uranium Production aims to:

• Educate students in all stages of the uranium production cycle, including surveys, planning, development, operations, as well as remediation, rehabilitation, treatment of mine water and other environmental aspects of closure of uranium mining and production plants;
• Contribute to the improvement in the areas of surveys, mining and remediation after extraction of uranium through research and development;
• Provide a forum for exchanging information and lessons learned - best practices in the field of uranium mining and processing.

COURSES

Each of the courses consists of a theoretical, lecture-based part and accompanying programmes that take the form of technical field trips to the DIAMO State Enterprise sites and premises, whose structure conveniently covers all aspects of the mining process. The high professional level and practical experience of specialized staff members of the enterprise is also leveraged with success. In addition to the DIAMO State Enterprise staff, teaching activities also involve lecturers from abroad, originating from mining institutions or freelance consultants active in diverse fields such as geology, hydrogeology, geomechanics, chemical technology, radiation protection, environmental protection, etc., with regard to the focus of the individual courses.

The courses are designed for groups of 5 to 18 participants. Examples of the courses:

• "Extraction using underground in situ leaching (ISL), both alkalic and acidic leaching"is a 2 or 4 weeks course for operators or 2-5 days course for managers;
• "Remediation of the consequences of in situ leaching"offers 1- or 2-week course focused on the remediation of the underground rock environment after acidic ISL, pump and treat method, processing of the acid solutions in the surface technologies and liquidation and reclamation of the surface.
• "Survey"- 2 or 4 weeks of a combined course focused on surveying uranium deposits and extraction in sandstone type deposits (ISL preferred);
• "Remediation of consequences of uranium mining and processing."1-week course focused on remediating heaps and tailings ponds, environmental monitoring, and radiation protection;
• "Alkaline-based uranium processing"is 1- or 2-week course focusing on the uranium ore mineralogy, technological requirements and processing, handling waste water and sludge, radiation protection and environmental monitoring, and field hands-on sessions in GEAM (uranium treatment plant);
• "Legal aspects of uranium mining"- 1-week course for senior management and supervisory staff focused on discussions with representatives of national authorities in charge of extraction and radiation protection; hands-on sessions in the field, in the DIAMO State Enterprise premises;
• "Radiation protection in mining practice"- 1-week course for senior management and supervisory staff;
• "Treatment of underground and mine water"offers 1- or 2-week course focusing on treatment of waste water, hydrochemistry, sampling, analysis, and technology;
• "Application of mathematical modelling in the U-production cycle and remedial process"–one week course targets on the use of different mathematical models during the geological survey, mining process and remedial activities, modelling of groundwater flow and transport of contaminants, environmental models for the risk analysis.
• "On-demand custom courses"can be designed to meet your individual needs. The course date, scope and contents can be specified upon agreement based on what is required by the applicant.

PARTNERS

The School of Uranium Production cooperates with a number of world-renowned institutions and uses their expert capacities and experience. From the cooperating institutes we can name International Atomic Energy Agency with the Headquarters in Vienna, Nuclear Energy Agency in Paris, World Nuclear Association in London, World Nuclear University in London, University of Nottingham, Czech Technical University in Prague - Faculty of Nuclear Sciences and Physical Engineering, Technical University of Ostrava, Charles University in Prague and State Office for Nuclear Safety in Prague.

CONCLUSION

From its very day of establishment the International Training Centre became a globally renowned facility of professional training. The number of participants - from a total of more than 20 countries - passing almost 50 distinct programmes has already reached 500. This number includes both projects of technical cooperation with IAEA and commercial contracts.

Country or International Organization

Czech Republic

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