etc.) of a tiny local region of a nuclear matter around the point and at the moment of Δ production.

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References:

1. D. Krpic et al., Phys. Rev. C 65, 034909 (2002).
2. Kh. K. Olimov, S. L. Lutpullaev, K. Olimov, K. G. Gulamov, and J. K. Olimov, Phys. Rev. C 75, 067901 (2007); Kh. K. Olimov, Phys. At. Nucl. 71, 93 (2008).
3. Kh. K. Olimov, Phys. Rev. C 76, 055202 (2007).
4. Kh. K. Olimov, Phys. At. Nucl. 72 (2009, in press).

THE DEVELOPMENT OF A MOBILE HOT CELL FACILITY FOR THE CONDITIONING OF SPENT HIGH ACTIVITY RADIOACTIVE SOURCES (SHARS) – 8436

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The concept of a mobile unit for the conditioning of spent high activity radioactive sources (SHARS) was conceived by the Waste Technology Section of the International Atomic Energy Agency (IAEA) in March 2002. The concept was approved during an international consultancy shortly thereafter. In its essence, this concept consisted of a mobile hot cell and a storage container for the recovery, conditioning and packaging of SHARS. The IAEA Waste Technology Section, with the financial support from the U.S. National Nuclear Security Administration (NNSA) through the IAEA Nuclear Security Fund and with the engineering and technical contribution of the South African Nuclear Energy Corporation Limited (Necsa), implemented the detailed design, fabrication, evaluation, and testing of the mobile hot cell to deal with obsolete irradiation devices such as teletherapy heads and self shielded irradiators. The project has initially targeted the African continent but expected soon to expand to Latin America and Asia. This hot cell would allow source removal, characterization, consolidation, repackaging in modern storage shields, and secure storage of high risk SHARS at national storage sites

The mobile hot cell and related equipment are transported in two shipping containers to a specific country where the following process takes place:

- assembly of hot cell;
- removal of DSRS from working shields, encapsulation into a stainless steel capsule and placement into a long term storage shield;
- conditioning of any other spent sources the country may require;
- dismantling of the hot cell; and
- shipping the hot cell and related equipment out of the country

Depending on the number of SHARS to be processed, the operation in one country may be executed over a few weeks period.

This paper will discuss the development of the mobile hot cell facility as well as the demonstration of the state of readiness of the system for manipulation of SHARS and the planned execution of the operations. The paper also reports about the pilot operation, the international peer review and the first actual field operation carried out in Sudan. Typical dose rates outside the hot cell during the pilot operation while processing SHARS of well defined activity are presented. As a result of this project, excess SHARS could be managed safely and securely and possibly more easily be repatriated to their country of origin or disposed of.

Fig. 1. The Mobile Hot cell during the pilot operation

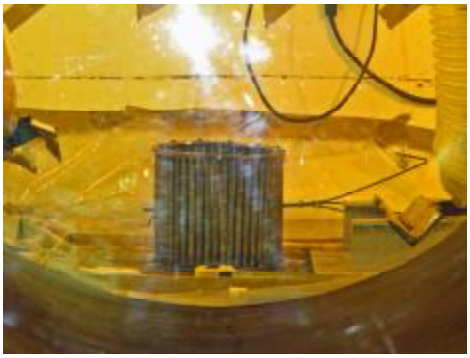

Fig. 2. The source pencil Assembly for a GC 220 during the source recovery and conditioning operation is Sudan

IRT-T RESEARCH REACTOR AND ITS USE IN SCIENTIFIC AND ENGINEERING PURPOSE

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The scientific and technical tasks on creation of new engineering, development of industries requiring essentially new methods of technological processes control, reception of substances and materials with given properties on the basis of radiating technologies appreciably continue to stimulate development of research works on the reactors.

Research nuclear reactor IRT-T was commissioned in 1967. From the moment of start-up until 1970, it worked on fuel assemblies with EK-10 type rods and graphite reflector. Since 1971 the active zone of reactors was made of 4-tube fuel assemblies with the 90% enrichment on U-235 and had beryllium reflector, that allowed design of reactor's thermal output up to 2,0 MW. From 1977 to 1984, the reactor was radically reconstructed. During reconstruction a new tank of reactor and in-tank devices, cooling system, system of control and protection, system of measuring devices, power supply, metering control, special ventilation etc were modernized or replaced. It has allowed increasing of reactor's thermal output from 2 MW up to 6 MW. It is obvious that as a result of reconstruction new reactor was constructed.

One of the important tasks performed on the IRT-T research nuclear reactor is the preparation of highly skilled experts in the development and operation of nuclear installations.

Reactor IRT-T until now occupies special place in a line of others – it is unique research reactor in Siberia and Far East. Consequently, by means of this reactor many research projects