



UKAEA



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PROJECT: **Feasibility Study & Technical Specification for
Conditioning of BN 350 NPP Liquid and Solid
Radioactive Waste – EuropeAid/121762/C/SV/KZ**

TITLE **EXECUTIVE SUMMARY (Extract)**

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1. REMINDING OF THE EUROPEAID/121762/C/SV/KZ SRWTF PROJECT'S ORIGIN

During operation of the BN-350 Nuclear Power Plant (BN-350 NPP) located at Aktau (Kazakhstan) the solid radioactive waste was stored at site in the Solid Radioactive Waste Storage Facility (SRWSF).

When this SRWSF was created the applicable regulations for waste storage and disposal were more permissive than in western countries and accordingly not compliant with present international rules, i.e.:

- None of the waste stored in nuclear at SRWSF has been completely characterised in terms of gamma & beta and alpha radio-emitters;
- Relevant waste passport traceability was limited usually to the dose rate on contact of the waste, for classifying it as low & intermediate and high level waste (LLW & ILW & HLW), with associated waste storage conditions within SRWSF trenches and bunkers;
- The relevant SRWSF Safety & Environmental justification studies were very limited per comparison to the existing European standards.
- The waste present in the SRWSF trenches has been buried without shielding and was not sealed;
- The hydrological data presently available shows the possibility that there is a fluctuation of the water table, caused by fluctuations in the level of the Caspian Sea, causing a risk of contamination spreading from the trenches.

After the BN-350 NPP operation stopped in 1999, a Kazakh decommissioning plan was elaborated for the Aktau NPP in the frame of an international assistance. This plan included the remediation of the SRWSF, however its last version did not take into account of all western recommendations. Consequently, this plan was refused by IAEA.

Later a new Kazakh decommissioning plan, including five different projects, has been elaborated all taking into account a Solid Radioactive Waste Treatment Facility (SRWTF) project.

Implementations of the two first projects are presently under way with international assistance, but the remaining three projects Liquid Radioactive Waste Treatment Facility (LRWTF), SRWTF, and Safe Store of the plant, have been delayed a few times mainly for financial reasons.

The new SRWTF project has been elaborated by a Russian Institute – VNIPIET – which intends dealing with the retrieval, conditioning and transfer for disposal of waste currently stored in the SRWSF and for the arising nuclear solid waste from the decommissioning activities of the BN-350 NPP.

This SRWTF project is currently under review by the State Supervisory Authorities of the Republic of Kazakhstan amongst which is the Atomic Energy Committee of the Ministry of

Energy and Mineral Resources for obtaining the regulatory authorisation for its implementation and future operation.

The EuropeAid/121762/C/SV/KZ project aimed at providing support to NAC and MAEC Kazatomprom, respectively the Beneficiary and End User of the BN-350 NPP, in addressing and dealing with the situation regarding the currently unsatisfactory storage of radioactive waste in the SRWSF and associated funding for the procurement of part of equipment compliant with western standards for dealing with these types of issues.

2. PROJECT PURPOSES

Purposes of the project were:

1. To collect necessary waste and SRWTF project data;
2. To perform a design review of them for defining the compliance of the SRWTF project with the safety and environmental issues to be considered;
3. To assess compliance of it with existing western standards and with the western management of such projects,
4. To establish a list of equipment compliant with western standards able to be procured for this project according to the relevant expected European funds;
5. To establish Tender Dossiers for procurement of this equipment compliant with EC rules as part of the ones necessary to Aktau BN350 NPP for dealing with the retrieval - treatment and conditioning of this stored radioactive waste;
6. To provide project management services through the Aktau Decommissioning Waste Coordination Unit (ADWCU), including Support for the Licensing and Procurement and Contracting Processes of this equipment;
7. To provide On-Site Assistance (OSA), through “Soft OSA” (transfer of Know-how and Methodologies).

3. PROJECT ACTIVITIES

3.1. Waste and SRWTF project data:

This data was collected with the End User and Beneficiary (MAEC and NAC Kazatomprom) involvement, even though the SRWTF project being under the responsibility of another Kazakh company (KATEP).

They have been the subject of the Technical Input Data Report reference AKTAU/0220 Issue 1 dated 28th August 2008.

3.2. Design Review

The final Design Assessment Report reference AKTAU/0410 Issue 2 dated 29th September 2009 takes into account the comments received from the End User. It includes as attachments the following reports:

- a) Preliminary Review of the Draft VNIPIET Summary Design document for the Retrieval and Treatment of BN-350 Stored Solid Radioactive Waste reference AKTAU/0116

Issue 1, dated 30th June 2008. This document was the main one used during the first Waste Management workshop held in the UK mid 2008 for showing to the End User and Beneficiary western practices and relevant equipment for dealing with this type of waste retrieval and decommissioning issues, and accordingly the interest of new equipment and storage & disposal containers;

- b) Preliminary Needs Assessment: Identification of the Outline Preferred Strategy for Retrieval and Treatment of BN-350 Stored Solid Radioactive Waste reference AKTAU/0201 Issue 2, dated 27th May 2009 based on End User comments. This document was one of the documents used during the 2nd Value Management/Engineering workshop held in Kazakhstan mid 2009 for showing to the End User and Beneficiary western knowledge and practice of value management techniques used within nuclear retrieval & decommissioning activities for obtaining maximum value compliant with technical requirements and minimum expenditure as per the ALARA/ALARP principles, (see also relevant Minutes reference AKTAU/0470 Issue 1, dated 5th August 2009). This workshop and the previous one mentioned in point b above were made in the frame of the On-Site Assistance for transfer of Know-how and Methodologies;
- c) Preliminary Assessment on the BN-350 Technical & Economical Study, Technical specification for SRWTF, Safety Analysis Report & Environmental Impact Assessment (EIA) reference AKTAU/0411 Issue 2, dated 7th October 2009;
- d) List of Equipment reference AKTAU/0412 Issue 1, dated 19th June 2009 for the different equipment to be procured with their ranking priority, and their main characteristics and advantages.

3.3. Technical Specification

The Specification of Equipment for Retrieval, Treatment, & Conditioning of Stored Solid Waste from the BN 350- Solid Radwaste Storage Facility (SRWSF) reference AKTAU/0472 Issue 2, dated 29th October 2009 considers the equipment able to be procured with EC expected funds for this project from the agreed list in Chapter 3.2.d above, and is composed of the following parts:

- a) Part 1 – General Information;
- b) Part 2 – Technical Specifications;
- c) Part 3 – Evaluation Criteria.

This document takes into account the End User and European Commission comments and the results of an external Peer Review performed on its Issue 1.

3.4. Licensing

According to Kazakhstan rules, the existing SRWTF (VNIPIET) Russian project needs to be approved by the KAEC (the “Kazakhstan Atomic Energy Committee”) for being implemented at site under the End User (MAEC Kazatomprom) responsibility. As a consequence, the taking into consideration of equipment changes in the adaptation of the existing SRWTF design for its implementation at BN-350 will not be possible before the agreement of the State Supervisory Authorities of RoK is obtained for the existing SRWTF project. This means that the licensing process aiming to support the End User for obtaining Kazakh authorities agreement on equipment to be procured with EC funds, has not been performed.

The Licensing Report reference AKTAU/0493 Issue 2, dated 19th October 2009 resumes the justification data to be used by the End User with these Kazakhstan Safety Authorities for obtaining relevant authorisation, i.e. is based on 3.2.b) and d) reports' data above and on actions still to be completed under the End User responsibility.

3.5. Tender Dossier

The European Commission needs from the Kazakh Authorities, significant indicators of the commitment of the Kazakh authorities to comply with EC rules i.e. to sign the relevant Financial Agreement, and to assume the complementary investment for completing the project in due time. Indicators haven't been given by Kazakh authorities at the ending date of the Consultant project.

As a consequence, the further files other than the above Technical Specification in 3.3 which would have constituted the Tender Dossier allowing EC starting the calls for tenders' processes immediately after this project, have been cancelled by EC from the present scope of work.