MEMORANDUM OF MEETING BETWEEN
THE USNRC AND THE
STATE NUCLEAR REGULATORY COMMITTEE OF UKRAINE
MARCH 19-23, 2001

Representatives of the State Nuclear Regulatory Committee of Ukraine (SNRCU) visited the United States during the period of March 19-23, 2001. The delegation was led by Vadym Gryschenko, Chairman of SNRCU. Others in the delegation included Sergiy Peleshenko, Assistant to the Chairman; Igor Simonov, Deputy Director, State Scientific and Technical Center for Nuclear and Radiation Safety (SSTC); and Olena Tolok, officer of the International Cooperation Division, SNRCU. During their visit, the representatives met with Chairman Meserve and available Commissioners, the Executive Director for Operations and appropriate members of the NRC staff.

This was the tenth annual meeting between the two agencies, the purpose of which is to review program results and accomplishments since the last meeting in January 2000, to reaffirm or revise previous program commitments, and to consider proposals for future activities under the "Lisbon" program. The NRC agreed to support the program efforts described in the Memorandum of Meeting (Attachment 1), subject to 1) obtaining the necessary funding from the U.S. Government and in accordance with U.S. Government and NRC policy and 2) reaching agreement on the detailed statements of work for future tasks. The agenda for these and other discussions is described in Attachment 2.

The meeting this year has taken place shortly after the Board of Directors of the European Bank for Reconstruction and Development (EBRD) conditionally approved a loan to Ukraine for completion and safety upgrading of two nuclear reactors under construction (Khmelnitsky 2 and Rivne 4, commonly referred to as K2/R4). One of the terms and conditions of the EBRD loan is a commitment from the G-7 and the European Commission to provide appropriate technical assistance. As such, the USNRC and SNRCU have agreed in principal to expand their ongoing efforts to include K2/R4-related activities, as appropriate.

William D. Travers
Executive Director for Operations
USNRC

March 23, 2001

Vadym Gryschenko
Chairman, State Nuclear
Regulatory Committee of Ukraine

March 23, 2001

Attachment 1

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SNRCU TASKS:

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7	Practical Application of the ALARA Principle in the Licensing Process (Task 5)
8	Regulatory Requirements for Acceptability of New or Alternative Nuclear Fuel Types (Task 4)
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10	Risk-informed Inservice Inspection (RIISI) (Task 7)
11	Implementation of New Neutron Fluence Methodology ("Tort Program") (Task 3)
15	Development of Business Plan for SSTC Slavutich Subsidiary
16	Information Storage and Retrieval System for Review of NPP Operation (Task 6)

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11	SCALE/ORIGEN Validation and Verification (Task 2)
15	Technical Translation and Interpreting (Task 1)
15	Project Management Training (Task 4)
16	Ukraine NPP Safety Projects Database and Project Control Procedures (Task 5)
17	Information Technology System Integration (Task 3)

PREFACE

Program Goals and Objectives: The goal of the program, as described in the October 25, 1993 agreement between Ukraine and the U.S., is to cooperate for "developing consistent and effective safety standards and procedures for use by regulatory authorities in Ukraine responsible for the safety of civilian nuclear facilities". The cooperation includes, but is not limited to, "training in regulatory methods and procedures, inspection techniques and evaluation, regulatory law, and the use of radioactive monitoring equipment; and improving regulatory effectiveness by developing appropriate regulatory standards, requirements and procedures and equipment."

Since 1993, NRC has successfully completed training for the nuclear regulatory authority in various regulatory areas as originally envisioned, and has provided assistance in strengthening the regulatory foundation.

The current emphasis is on reinforcing accomplishments and responding to current plans encompassing a wide range of regulatory activities. Over the next three-to-four years, SNRCU must, amoing other things:

- issue long-term licenses to thirteen nuclear power plant (NPP) units;
- license numerous projects for the Chornobyl Shelter Implementation Plan;
- license the decommissioning of all units of the Chornobyl NPP;
- license new fuel designs for the VVER 1000;
- license the dry spent fuel storage facility at the Zaporozhe NPP;
- license two new units (Rivne Unit 4 and Khmelnitsky Unit 2).

Most notable among the current objectives is the licensing of Khmelnitsky 2 and Rivne 4 (K2/R4). Ongoing or planned USNRC/SNRCU activities (such as review of safety analysis reports, review and assessment of nuclear fuel, nuclear fuel transportation, storage and risk-informed inservice inspection and reactor pressure vessel embrittlement assessment) for nuclear facilities currently operating in Ukraine provide a solid basis which could be expanded to include K2/R4. New K2/R4-specific activities may also be developed (such as development of a startup testing inspection program). All activities will be closely coordinated between the USNRC, SNRCU, DOE, the European Union's TACIS program, the EBRD, the IAEA and others, as appropriate.

Much of the work described in the following pages is being conducted in Ukraine under two implementing agreements. One covers all work being done by the SSTC. The other agreement covers work to enhance the emergency response system.

I LEGAL BASIS

A. Legislation OGC

The purpose is to support development of legislation and application of enforcement measures. NRC comments on laws and regulations to serve as the basis for activities of the SNRCU. Major nuclear legislation has been promulgated over the last six years. In March, 2001, the President of Ukraine signed legislation enhancing the nuclear regulator's position.

B. Rulemaking

Ukraine has developed the necessary nuclear legislation, most provisions of which are already implemented. However, there are still a number of nuclear safety issues of a financial nature that remain unsettled. Ukraine continues to employ outmoded regulations on radioactive waste, decommissioning of the nuclear installations, nuclear damage indemnification and other similar areas. The priority task of the SNRCU is the establishment of special funds for radioactive waste management; decommissioning of nuclear installations; nuclear safety; nuclear operator's civil liability for nuclear damage; and social and economic interests of the population in the territories with nuclear facilities.

The main activity of SNRCU will be in the development of norms, rules and standards for nuclear and radiation safety is compliance with the national policy on harmonization of the regulatory framework of Ukraine with the European Union standards. The most advanced international regulatory framework in the sphere of nuclear energy use is comprised by requirements, standards and rules of the IAEA. Therefore, SNRCU plans to use IAEA standards as rules and regulations of nuclear and radiation safety of Ukraine. Such an approach would require a reasonable balance between international nuclear and radiation safety standards and domestic standards for designs, installations and equipment. The priority is to replace former Soviet documents with national regulations.

C. Regulation Development: Enforcement

Results Since Last Meeting

Carried out a one-week workshop at the NRC headquarters (proposed dates are May-June) for new attorneys employed by the SNRCU and representatives of the Main State Inspectorate to discuss the following matters:

1. Duties of regulatory lawyers at NRC, especially for the legal support of inspection and enforcement activities.

2. SNRCU experience in implementing enforcement regulations and procedures and need for further development, in particular application of severity levels to inspection findings; and

3. Potential revisions to the regulations and procedures for applying sanctions and determining severity levels.

Future Activities

1. Subject to avaliable resources, NRC representatives will conduct a seminar to be held in September/October in Kyiv on developing regulatory framework for financial requirements in the areas of decommissioning funding and third party liability with participation of representatives of the Verkhovna Rada of Ukraine, NPP's, SNRCU, and other Federal agencies of Ukraine.

2. Review and comment on proposed laws, regulations, and procedures upon request.

3. Improve SNRCU's enforcement practices and regulatory framework, taking into account prior experience. In particular, SNRCU needs to develop enforcement regulations and procedures, in particular in the use of severity levels in the context of inspection findings. However, further discussions on the topic of enforcement will be delayed until 2002.

II. REGULATORY ACTIVITIES

A. Licensing - NPPs

1. **SAR Assessment**
2. **Regulatory Review Guidelines** (NRR)

Cooperative activities are conducted according to a "partnering" model which encourages the active participation of SNRCU specialists during the work development meetings. These meetings determine the level of detail needed for a training workshop held in Ukraine (if feasible), the background of the targeted audience, and particular topics for emphasis.

Results Since Last Meeting

Development of the Methodology and the Performance of the State Expert Assessment of Nuclear and Radiation Safety of Safety Analysis Reports (SNRCU Task 1)

The objective of this task is to develop the methodologies and perform the State Expert Assessment of nuclear and radiation safety of Safety Analysis Reports. Methodology documents have been prepared and some plant-specific analyses have been completed.

An NRC representative traveled to a meeting in Kyiv, Ukraine in December 2000 to harmonize schedules for producing safety analysis reports (SARs) for Ukrainian nuclear plants, in particular, the South Ukraine plant. At the meeting, a Schedule Review Committee was formed to coordinate the schedules for producing and reviewing SARs for the Ukrainian NPPs. The membership is comprised of USNRC, SNRCU, DOE, Energoatom and GRS of Germany.

Scheduled deliverables were completed and are in the final stages of approval.

Previously Approved Plans

1. Work on Task 1 will continue in accordance with the task order.

2. At the last meeting, the task, "Practical Application of the ALARA Principle in the Licensing Process" (SNRCU Task 5), was approved but not funded in 2000 due to scheduling difficulties.

Future Activities

1. A meeting of the Schedule Review Committee on the development and review of Safety Analysis Reports will be held in April or early May, 2001.

2. Task 5 will be revised to incorporate a statement of policy on ALARA, and will contain draft regulations reflecting this policy.

II. REGULATORY ACTIVITIES (Cont..)

A. Licensing - NPPs (Cont.)

3. Fuel Conversion and Fabrication (NRR)

Results Since Last Meeting

Development of Regulatory Authority's Approaches to Licensing Alternative Nuclear Fuel for VVER Reactors and Expert Review of Documents to be Submitted by the Licensee to RA During Project Implementation (SNRCU Task 4.1)

The objective of this task is:
- To develop guidelines for experts performing technical evaluation of documents submitted to the regulatory body in the framework of licensing activities related to new types of nuclear fuel manufactured by Westinghouse;
- To perform State expert review of a number of substantiating materials submitted by the Applicant to the regulatory body in the framework of the project introducing Westinghouse nuclear fuel at Ukraine NPP with VVER-1000 reactors.

A key feature of this task is to identify jointly the current specific regulatory requirements and documents, with recommended changes and technical bases. These requirements will be used by the fuel vendor to develop a proposal for lead nuclear fuel test assemblies (LTAs) design and fabrication for submittal to the SNRCU.

The scheduled deliverables were completed.

Previously Approved Plans

Work on Task 4.1 will continue in accordance with the task order.

Proposed Future Activity

NRC, in cooperation with DOE, will arrange for a workshop for technical experts in applied safety substantiation methodology which will describe NRC's approach to certifying fuel designs. DOE will provide a detailed agenda for NRC planning purposes. SNRCU considers NRC's participation as essential. The workshop will determine the desirability of additional workshops involving NRC.

SNRCU proposes SNRCU Subtask 4.2 to assist in performing the following activities:
- regulatory review of two-three of six documents to be submitted by the licensee for substantiating the introduction of the alternative nuclear fuel;
- becoming familiar with the US methodologies and calculation codes that will be necessary to successfully perform expert reviews within the licensing process conducted in Ukraine for alternative nuclear fuel produced by Westinghouse. SNRCU will consider developing guidelines for review of the vendor's submittals. Consideration of other countries' regulatory requirements for licensing of third-party fuel should be included in this review;
- familiarization with the US HELIOS code (See **C.1. Codes**: Future Plans).

II. REGULATORY ACTIVITIES (Cont.)

A. Licensing - NPPs (Cont.)

4. Spent Fuel Storage & Transportation (NMSS)

Results Since Last Meeting

Conservatism in Safety Assessments of the Transportation and Storage of Nuclear Fuel (SNRCU Task 2)

The objective of the task is to perform a comparative analysis of Ukrainian and U.S. regulations to determine the extent of conservatism of the Ukrainian regulatory documents in force when assessing the nuclear safety of spent nuclear fuel storage and transportation systems. The work is on schedule.

The deliverables (Subtasks 1.0 and 2.0) scheduled for this period were completed.

Previously Approved Plans

Work on Task 2 will continue in accordance with the task order.

II. REGULATORY ACTIVITIES

B. Oversight & Inspections

1. Inspection Strategy and Practice (NRR)

Results Since Last Meeting

Development of Recommendations for SNRA as to Implementation of RIISI Methodology at NPPs in Ukraine (SNRCU Task 7)

The purpose of this task is to provide scientific and technical support introducing risk informed in-service inspection at Ukraine NPPs. The comparative analysis of normative documentation in USA and Ukraine on arrangement and performing of in-service inspection has been completed.

The deliverables scheduled for this period were completed

A workshop was conducted on NRC's RIISI program. This included visits to two reactors and discussions with Westinghouse and EPRI.

Previously Approved Plans

Work on SNRCU Task 7 will continue in accordance with the task order.

Future Work

1. NRC will review of document on Regulatory Policy on Risk-Informed Regulations.

2. Task No.7.2 is approved, which is to develop a document on regulatory policy and requirements for planning, program developing, and preparing reporting documents on the in-service inspection of primary loop (circuit) pipes at Ukrainian NPPs. This would include training on the PCPRAISE code. (See **C.1. Codes**: Future Plans)

3. In the future, consideration should be given to exchanging experience in the inspection of construction of nuclear power plants. This exchange would be relevant to the completion of K2/R4 in Ukraine and the consideration of possible new license applications in the U.S. In the next two months, SNRCU will develop a plan of activities related to this task.

C. Analytical Techniques and Methods to Support Regulatory Activities

1 Codes (RES, NRR)

Results Since Last Meeting

a) SCALE/ORIGEN Validation and Verification as Applied to VVER and RBMK Reactors (PNL Task 2). The objective is to verify the applicability of different libraries included in SCALE package for assessing the nuclear safety of systems containing fuel of VVER and RBMK-type reactors.

The task is nearing its end. The final draft report has been received from SSTC for comment. The final report will be placed in the U.S. National Code Center.

b) Implementation of New Methodology for Calculating Neutron Fluence on VVER Reactor Pressure Vessels (SNRCU Task 3)
The objective of the task is to master and introduce into the practice of expert assessment of the condition of VVER-type reactor vessel the DOORS package designed for modeling the neutron fluxes out of the reactor core boundaries. The start of work was postponed until training on the code DOORS could be accomplished. As called for in the task, a planning meeting was conducted for a training workshop scheduled for the Spring of 2001. The activity is designed to give the staff of the Ukrainian regulatory body an in-depth familiarity with methodology for determining reactor vessel integrity that is acceptable to the NRC.

Previously Approved Plans

Work on SNRCU Task 3 will continue in accordance with the task order.

Future Plans

a) SCALE/ORIGEN Validation and Verification as Applied to VVER and RBMK Reactors (PNL Task 2).

SSTC will validate the ORIGEN Code and related portions of the SCALE package. This will improve the accuracy of the analysis of burnup credit issues related to spent fuel storage and core physics calculation for reload analysis (since the code may be loaded with fuel of various fuel designs, enrichments and burnup histories). The validated code will permit SNRCU to evaluate license submissions accurately. This code will also support SNRCU Task 2, Conservatism in Assessment of Safety for the Transportation and Storage of Nuclear Fuel and SNRCU Task 4, Regulatory Requirements for Acceptability of New or Alternative Nuclear Fuel Types.

b) Implementation of New Methodology for Calculating Neutron Fluence on VVER Reactor Pressure Vessels (SNRCU Task 3)
A workshop will be conducted on the two-dimensional DOORS code. [3-4 experts, May 2001 in U.S.]

c) Provide and train SNRCU and SSTC staff on the PCPRAISE code developed by NRC for assessing risk-informed inspection of pipes. (SNRCU Task 7.2)

d) Provide and train SNRCU and SSTC staff on the HELIOS code developed by Scanpower to calculate core physics geometries (if the cost is reasonable). (SNRCU Task 4.2)

2. Probabilistic Risk Analysis (Probabilistic Safety Assessment) (NRR/RES)

Results Since Last Meeting

No activities were undertaken.

3. Performance assessment (HR/NRR)

Results Since Last Meeting

No work was done on analytical simulators during 2000.

Previously Approved Plans

Simulator activity is covered under **IV.D. EQUIPMENT**

Future Activities

It was noted that NRC and the IAEA are sponsoring a workshop at NRC on PRA.

SNRCU invited USNRC to participate in an IAEA RER workshop to be held in the Czech Republic.

III Emergency Response & Related Capabilities (IRO)

Results Since Last Meeting

Two work meetings were conducted during 2000. A USNRC representative visited the, SNRCU (an SNRCU predecessor), in April and an SNRCU representative visited USNRC in December.

Mainly, all activity was based on work under the contract between SNRCU and its InfoCenter that was set in accordance with the Implementing Agreement between SNRA (an SNRCU predecessor) and USNRC. The InfoCenter completed the following tasks in 2000 and early 2001:

1. Map procurement. This task included procurement of various paper maps, a map case and accessories. One digital map of Ukrainian territory was also supplied that is necessary for implementation of the RODOS system.
2. Purchase telephone line maintenance device. The device is used to analyze and diagnose transmission quality (before failure) on dedicated telephone lines that serve the Information and Emergency Center (IEC).
3. Support of the IEC communication system. The task contained a number of elements: two-year maintenance of the IEC telephone system, two-year lease for all IEC public and dedicated telephone lines, and installation of 10 new telephone numbers and a 100-pair cable to provide city telephone service to the new SNRA building.
4. Establishment of IEC technical library. This task was devoted to collecting of materials, including NPPs' operational documentation, necessary for work of IEC experts.
5. Providing Internet services for SNRCU and IEC. This task related both to public affairs activity and emergency response. Under the task, equipment necessary to assure safe access to the Internet Service Provider (ISP) was supplied and installed – two high-speed modems and a hardware/software firewall. The task also included rent payments for a dedicated telephone line to the ISP and rent for Internet service for 2 years.
6. Sun work station (WS) modernization. This task had 2 objectives: 1) to envisage a way to run MS Windows/DOS software under a Unix environment and 2) to provide interface between Sun WSs and PCs with modeling software to be installed (Adam, Sesame or other).
7. Purchase computer equipment, software and spare parts. This task included procurement of hardware/software and spare parts for the IEC. For example, two new monitors were supplied to replace failed Gamma system monitors, a powerful PC was supplied for later installation of Adam, etc. The task also included procurement of a notebook, PC, laser printer and necessary software for public affairs activities, along with the following additional items: a recorder, ultra range cordless telephone with answering machine, a fax machine, and a digital camera with accessories.

In addition, the NRC and SNRCU representatives continued preparations for acquiring a copy of ADAM software for test and evaluation in the SNRCU IEC. They met with ERI, the ADAM developer, and agreed to the specific future activities listed in item 3 below.

Future activities

The SNRCU-SNRA Implementing Agreement was renewed for a 3-year renewal at the annual meeting. The InfoCenter contract will also need to be renewed with SNRCU soon after that.

1. Work will proceed in the framework of the new SNRCU-USNRC Implementing Agreement, the SNRCU-InfoCenter contract, and the Project Plan, which was revised to add the following new tasks:

- Continue to support the prompt notification system (SOW of December 4, 2000).
- Develop an English-language page for the SNRCU prototype website (SOW of December 8, 2000).
- Equip the working places of the Resident Inspectors in NPP emergency response centers, replace Gamma system computers, and provide remaining equipment for public affairs.

2. It is envisaged that other possible tasks may arise during the SNRCU transition to independence that are not specifically related to any current categories in the NRC-SNRCU cooperative program. These tasks possibly could be performed under the SNRCU-InfoCenter contract, also, but must be addressed case-by-case as they arise. One important example is the probable need to move the emergency center. The city of Kyiv plans to demolish the building that currently houses the emergency center as soon as possible. Plans and schedules are not yet final but action may have to be taken quickly.

3. The following major steps are to be done for acquiring ADAM:

- NRC will provide ERI with a list of items that are useful to calculate (e.g., RWST depletion rate based on the make-up flow rate, etc.)
- Based on the above list, ERI will provide the complete list of parameters, requirements for units, instrumentation ranges, location of measurements, etc., that need to be provided by SNRCU to ERI.
- NRC and/or SNRCU will prepare a number of cataloged files of scenarios based on the results of SNRCU simulator runs so that ERI can assess if ADAM can meet the following SNRCU objectives:
  - Identify and characterize the accident based on comparison of online data with SNRCU simulator-generated accident sequences.
  - Identify critical differences between a scenario manually selected (from the ADAM program or the SNRCU scenario library) and online data.
- ERI will submit a list of plant-related design data (including values for a typical VVER 440/230) to SNRCU. It will be used to help estimate the amount of data to be collected for a VVER-1000.
- NRC will obtain confirmation about the possibility of direct payment of ERI invoices by NRC.
- ERI will prepare the draft contract, including all the attachments, etc., for review by SNRCU and its Contractor.

In accordance with the milestones above, it is currently scheduled that ADAM will be delivered during 2002.

IV INFRASTRUCTURE

A Training (OIP/PNL)

Results Since Last Meeting

The NRC sponsored the attendance of an SSTC representative from the Kharkiv branch, at the international workshop on instrumentation and controls at the American Nuclear Society conference held in Washington DC, November 2000.

The following describes current tasks:

1. Development of Standard Terminology in the Field of Safety and Technical Translation Training (PNL Task 1)
The objectives have been 1) to develop suitable technical guidelines on nuclear safety and regulation terminology; and 2) to develop training materials for translators and interpreters in order to improve translations of documents in the field of nuclear safety and regulation.

The activities scheduled for this period were accomplished in accordance with the task order.

2. Development, Concurrence, and Approval of the "Business Plan of SSTC NRS Slavutich Subsidiary Development" (SSTC Task 8)

The objective of the project is to prepare a plan to provide more technical support to the SNRCU in the Chornobyl region by increasing the staff and developing the capabilities of SSTC in the town of Slavutich. This expansion would permit more intensive involvement in expert activities performed in the framework of projects implemented in the Chornobyl region, as well as in the enhancement of SSTC scientific and technical support for these projects. The business plan has been developed.

3. Project Management Training (PNL Task 4)
The objectives are to: 1) train SSTC leadership in project management techniques; 2) support development of project management policies and procedures; and 3) to train SSTC staff to become project managers. This task is completed.

Previously Approved Plans

1. Work under PNL Task 1 will be redirected (see Future Plans).

2. Work under SNRCU Task 8 will continue in accordance with the task order.

Future Plans

1. Technical Language Training in the Field of Nuclear Safety (PNL Task 1, revised)).

The lesson plan will be completed as described in the task order. The task will be redirected to provide instruction in English language technical terminology.

2. Under the Slavutich Business Plan (Section 5), NRC will support retraining of Chornobyl workers for employment at the SSTC Slavutich Branch.

SNRCU will prepare a proposal for regulatory training at the Kuzmitcz Training Center in Kyiv.

NRC will support for SNRCU and SSTC experts to participate in selected IAEA consultative and technical committees and conferences in the U.S.

B Communications (OPA/IRO/OCIO)

Public Affairs, website design and internet access are covered under **IV. EMERGENCY PREPAREDNESS AND RELATED CAPABILITIES.** (Future Activities, below, includes an item on website assistance).

C Data bases (OIP/PNL)

Results Since Last Meeting

1. Information Storage and Retrieval System for Review of NPP Operations (SNRCU Task 6)

The objective of this task is to develop an information system for storage, processing and analysis of documentation that determines safe operation of Ukrainian VVER-1000 Type Reactors.

All deliverables scheduled for this period were completed.

2. Ukraine NPP Safety Improvement Projects Database and Project Control Procedures (PNL Task 5)

The objective of this task is to develop an integrated approach to monitoring Ukraine NPP safety improvement projects in order to achieve maximum benefit from the activities. The structure of the new database has been developed together with the draft scheme of receiving information.
This task is close to completion.

Previously Approved Plans

1. Work on SNRCU Task 6 will continue in accordance with the task order.

2. Work on SNRCU Task 5 will continue in accordance with the task order.

Future Activity

1. Development of Automated Informational System for Storage, Processing and Analysis of Documentation that Determines Safe Operation of Ukrainian NPP with VVER-1000 Type Reactors (SNRCU Task 6). Consideration will be given to including design documentation in

the database. Specific proposals can be prepared and presented for discussion after the database has been completely developed and tested (second part of 2001).

2. NRC agreed to provide SNRCU, on requested, technical assistance with the economical management of information at its soon-to-be-public web site as the site grows in scope and content.

D Equipment (OIP/PNL)

Results Since Last Meeting

1. Creation of SSTC NRS Information Technology System (PNL Task 3)
The purpose of this task is to develop a strategic plan for the management of information technology and to integrate equipment provided from various sources . Under the task, hardware will be supplied for accelerating the development of standards to be used by Western companies for modifying Soviet design reactors. Both sides noted delays in implementation because of certain organizational matters which have significantly changed options available to meet project objectives. These issues have been resolved.

2. Supply of spare parts to the analytical simulator (AS) computing equipment has been completed. (All spare parts to the AS were delivered in accordance with the contract: hardware (computer and office equipment); software and associated training for Zaporozhe 5, a VVER 1000-320, and an acceptance document was signed on February 18, 2000, authorizing the software (based on Kola 4) to undergo trial operation as the intermediate option for Rivne 2, a VVER 440-213).

Complete the delivery of the remaining spare parts for the AS as agreed during the last meeting on September 28 1999 at HQ of the Main State Inspectorate in Kyiv.
(Procurement of the remaining part of spare parts for the AS was done in accordance with the scope agreed during meeting held on September 1999).

Previously Approved Plans

1. The task on Creation of Information Technology System (PNL Task 3) will be completed by 31 May 2001, and work will continue on the creation of the corporate information system.

2. Analytical Simulator Software for the Rivne NPP
SNRA currently has software designed for the Kola NPP. In order to compensate for the differences between the Kola and the Rivne NPP designs, it was agreed that NRC would procure and have installed on the SNRCU analytical simulator a copy of the full-scope Rivne simulator software. This software is currently being developed for DOE. When this development has been completed, the NRC will consider purchasing a copy as well as the associated Rivne training scenario. (This upgrade would greatly enhance the effectiveness of SNRA's analytical simulator in all training areas, data input to the crisis center, and resolve data and labeling differences that exist between the Kola software and the actual Rivne plant data).

The transition from the Kola software to the Rivne software as well as the delivery of the Rivne training scenarios should be completed before the end of 2001.

Future Activities

1. Analytical Simulator (in priority order). The results of any of the work done below should be accompanied by a technical report on how the AS is to be used.

a) Perform current modernization of hardware and software of VVER-1000/320, because existing capabilities of the hardware (memory) need to be extended. (Upgraded software for VVER-1000/320 for the AS which is similar to the existing analytical simulator, was developed the same company (GSE Power Systems-VNIIAES) for the AS of Rostov NPP (Russia)). Moreover, several considerable modifications were carried out for the unit-prototype Zaporozhe 5.

b) Extend memory on hard discs to install VVER-440/213 (Rovno-2 NPP) and to optimize other soft ware programs.

c) Provide training materials for VVER 440-231.

d) Introduce principal modifications to model of VVER-1000/320.

e) investigate the possibility of adding Safety Parameter Display System capability to the simulator. This system has been added by DOE to Ukrainian plants.

The work that has been done to develop the AS and apply them for regulatory uses has been an important and unique contribution to the regulatory agency in Ukraine. It was agreed that this work should be reported, to highlight this work and to encourage interaction between the SNRCU and others working in this field. It was agreed that the UNRCU, with the assistance of the NRC, will develop a report of this work and will publish the results internationally (in a Journal or Conference). If resources are available the NRC will support the publication of the report".

2. A project for equipping SSTC's Slavutich Branch (SNRCU Task 8, discussed in IV.A., above) will be developed and considered at a later date.

3. Headquarters Space
The SNRCU reported its need to transfer the Information and Emergency Center (ERI) to its new premises and to upgrade one floor. Both USNRC and SNRCU recognize the desirability of conducting both activities as one construction project. USNRC will endeavor to fund the portion of the project pertaining to the transfer of the ERI.

V. MPC&A AND PHYSICAL PROTECTION (NMSS)

Previously Approved Plans (when funds become available)

1. Course on licensing of Nuclear Material Accountancy and Control Systems. The course was planned in 1998 but at the request of the Ukrainian party was postponed.

2. Course on licensing of Nuclear Material Accountancy and Control Systems for inspectors. The Course was planned for 1998. However, the Inspectorate was not ready to attend the Course at that time and it was decided to conduct it in Kyiv in October 1999 in the George Kuzmitcz Training Center on Physical Protection and MC&A. Due to NRC financial problems the Course was not conducted.

3. To conduct training on licensing of Nuclear Material Accountancy and Control Systems for inspectors. In 1999 the inspection functions over MPC&A were delegated to the Main State Inspectorate. The Inspectorate's inspectors are lack of the appropriate knowledge and experience in the area of Safeguards.

Future Plans

Currently, problems on inspection procedures regarding the numerical criteria to put nuclear material under safeguards, the frequency and scope of measurements to be conducted during inspection at different types of facilities are not settled. For this reason SNRCU proposes to incorporate the following interrelated works into the Cooperation Plan:

1. Support in development of criteria for inspection of MPC&A of nuclear material. Expected outcomes are: recommendations on inspection procedures.

2. Support in development of criteria to put and release from Safeguards. Expected outcomes: methodology recommendations to the Regulatory authority

3. Support in development of requirements to the scope of measurement depending on nuclear fuel type.

Physical Protection

Results Since Last meeting

The planned activities were not implemented because appropriate financial resources were unavailable.

Future Plans

Conduct seminars on Physical Protection in Kyiv:
- Raising of the Ukrainian Inspectors Skills in Physical Protection; Exchange of Experience;
- Training of Guards Responsible for Securing Nuclear Material and Nuclear Facilities.

Planned tasks had been approved in previous years, but could not be implemented due to lack of funding. The NRC will continue to seek funding to meet with SNRCU to discuss the status of Ukraine's MPC&A regulatory program, to determine task that the USNRC may be able to address with Ukraine, and to address those tasks with sufficient levels of funding.

Attachment 1

SCHEDULE FOR ANNUAL MEETING WITH THE STATE NUCLEAR REGULATORY COMMITTEE OF UKRAINE MARCH 19-23, 2001

DELEGATION:

Vadim Gryshchenko, Chairman, State Nuclear Regulatory Committee of Ukraine (SNRCU)
Sergiy Peleshenko, Emergency Response and Public Affairs, SNRCU
Igor Simonov, Deputy Director, State Scientific and Technical Center, SNRCU
Olena Tolok, International Relations Department, SNRCU

Interpreters (State Department)
Nicholas Berkoff
Galina Holmes

MONDAY, MARCH 19

9:00-9:30	Commissioner Dicus
9:30-10:00	EDO William Travers
10:15-10:45	Commissioner Merrifield
11:00-11:30	Commissioner McGaffigan
11:30-1:30	Lunch

(Rm. O-3B6)

12:30-2:00 **Legal Basis**:

- **Legislation**
  (OGC: Stu Treby, Jim Lieberman
- **Regulation Development: Enforcement**
  (OE: Dave Nelson; OGC: Jim Lieberman)

3:30 **Department of State**

TUESDAY, MARCH 20

(Rm. O-3B6)

	Regulatory Activities:
9:00-10:00	**Licensing - NPPs**
	- SAR Assessment
	SSTC Task 1: SAR Expert Assessments
	NRR: Mike Cullingford, Lee Banic
	RES: Mary Drouin (PSA)
	BNL (for DOE): Ted Ginsberg
10:00-10:30	**- SRP Development**
	SSTC Task 1, Subtask M5: Technical Safety Substantiation
	NRR: Mike Cullingford; Lee Banic
10:30-11:00	SSTC Task 3: Implementation of Neutron Fluence Methodology
	NRR: Mike Cullingford; Lee Banic
11:30-12:30	Lunch
	Regulatory Activities:
	Licensing - NPPs
12:30-1:00	**- SAR Assessment**
	SSTC Task 1, Subtask M2 Methodology on DBA Assessment
	NRR: Mike Cullingford, Lee Banic
1:00-2:00	**- Fuel Conversion and Fabrication**
	SSTC Task 4: Nuclear Fuel Project
	NRR:Mike Cullingford, Lee Banic
	DOE: Jim Cannon, PNNL: Richard LaTorre
2:00-3:00	**Oversight & Inspections**
	- Inspection Strategy and Practice
	SSTC Task 7: Risk Informed Inservice Inspection
	NRR: Mike Cullingford, Lee Banic
3:00-4:00	**- SAR Assessment** (Cont.)
	SAR Schedules
	BNL: Ted Ginsberg; NRC: Gordon Fowler

WEDNESDAY, MARCH 21

(Rm. O-3B6)

10:00-11:30 **Analytical Techniques and Methods to Support Regulatory Activities**

SSTC Task 5 (proposed): Man-Sievert cost equivalence for applying ALARA

NRR: Michael Cullingford, Lee Banic

Regulatory Activities

11:30-12:00 - **MPC&A**

NMSS: Mike Kelly, Nancy Fragoyannis

12:00-12:45 Lunch

1:00-1:30 Chairman Meserve

Regulatory Activities:

2:00-2:30 - **Nuclear Materials Licensing**
- **Spent Fuel & Transportation**

SSTC Task 2: Conservatism in Nuclear Fuel Requirements

NMSS: Barry Mendelsohn

- Part 1- Conservatism in criticality safety requirements
- Part 2 - Assumptions for accident analyses

NMSS: Wayne Hodges

2:30-3:00 **Infrastructure**

- **Training**

PNL Task 1: Nuclear Terminology and Translations

PNL Task 4: Project Management Training

PNL: George Vargo

3:00-4:30 **Analytical Techniques and Methods to Support Regulatory Activities**

- **Codes**

PNL Task 2: SCALE/ORIGEN Validation

PNL: George Vargo

- **Analytical Simulators**

RES: Steve Arndt

THURSDAY, MARCH 22

(Rm. O-3B6)

9:00-10:30 **Infrastructure**

- **Communications**
  IRO:Joe Himes; OCIO: Jim Shields, Walt Oliu

- **Data bases**
  PNL Task 5: Safety Projects Database
  PNL: George Vargo
  SSTC Task 6: Information Storage & Retrieval
  OIP: Gordon Fowler

- **Hardware upgrades**
  PNL Task 3: Information Technology Integration
  PNL: George Vargo
  SSTC Task 8: Slavutich Division Development Plan
  OIP: Gordon Fowler

10:30-11:30 **Emergency Response & Contingency Planning**
IRO: Joe Himes

11:30-1:30 **Lunch hosted by EDO**
(Commission Dining Room, 18th Floor)

(Rm. O-3B6)
1:30-4:30 Additional discussion;
Review and revise Memorandum of Meeting

FRIDAY, MARCH 23

(Rm. O-3B6)
8:30-2:30 Review and revise Memorandum of Meeting

18th Floor Conference Room
3:00 pm Principals sign Memorandum of Meeting
W. Travers, V. Gryshchenko