There are 15 nuclear reactors in Ukraine, located at four different sites. National Nuclear Energy Generating Company “Energoatom” which belongs to the Ministry of Energy and Coal Industry of Ukraine, operates the reactors. The majority of the reactors belong to the VVER 1000 type, two reactors are of VVER 440 type. Two new reactors of the VVER 1000 type are planned to be completed in the nearest future. The company was founded in 1997. In 1998, 2002 and 2004 the assessments of the safety culture have been conducted by the Directorate of Safety Surveillance on all Ukrainian NPPs. During these assessments, the attitude of the personnel of the NPPs to the questions of safety has been evaluated. In 2002 “Energoatom” organized first international conference “Safety Culture at Ukrainian Nuclear Power Plants”. Since then, the conferences have been conducted regularly and in 2012, the 6th conference took place. In 2008, the Regulatory Body had revised and introduced a regulatory document “General guidelines of the NPP safety” NP 306.2.141-2008 07.08.2008. This document defined general requirements for safety culture compliance. The Safety Culture Council was founded shortly afterwards and “the Safety culture level enhancement program for 2009-2010” based on recommendations in IAEA Standards was introduced. In the framework defined by this program, the following documents were prepared and implemented:

- Evaluation criteria and procedures for assessment of safety culture at “Energoatom”.
- Guidelines for monitoring of the state of the safety culture at the divisions of Energoatom.
- Guidelines for monitoring of self-assessment of the safety culture in the directorates of “Energoatom”.
- Guidelines for self-assessment of the safety culture in the directorates and divisions of “Energoatom”.

The integrated approach to the evaluation of safety culture has been introduced on Ukrainian NPPs and included besides traditional safety parameters also safety evaluations based on self-assessments and independent monitoring. Major activities related to the documents mentioned above have been completed in 2010 and the reports disseminated. The experience gathered during the implementation of “the 2009-2010 Safety culture enhancement program” have been considered during development of the second “Safety culture enhancement program for 2011-2012” PM-D.0.03.531-11. Accordingly, the “Guidelines for monitoring program of the safety culture at the divisions of Energoatom” has been adapted and implemented.

Currently, the Headquarters of “Energoatom” do not have special division responsible for implementation activities related to safety culture. Major activities are distributed between 4 directorates: Directorates of Quality, Directorate of Surveillance, Directorate of Production and Research and Development Center. Directorate of Quality focuses on the training and self-assessment of personnel in safety culture. The safety culture level enhancement program is being developed and monitored by Directorate of Production. The Research and Development Center supports organization of meetings and conferences related to the safety culture (although first conferences were organized by Directorate of Surveillance). Directorate of Surveillance is responsible for monitoring of the safety culture in the
departments of “Energoatom”. The last safety culture monitoring by Directorate of Surveillance has been conducted in April of 2012 at all sites of the NPPs of Ukraine. The monitoring was conducted by experts of different departments of “Energoatom” and NPPs.

In this presentation I would like to focus on the “Guidelines for monitoring of the state of the safety culture at the divisions of Energoatom”. This program was developed on the basis of the guidelines developed by IAEA (INSAG-4, IAEA-TECDOC-743/R, 744, 1321, 1329), guidelines „SCART“ (IAEA Services Series number 16), and considering the long time experience gathered during official monitoring of safety culture starting from 1998.

The integrated approach to the evaluation of safety culture has been introduced on Ukrainian NPPs and included besides traditional safety parameters also safety evaluations based on self-assessments of personnel via questionnaires and general attitude of the personnel of NPPs to the safety culture. The monitoring of the documentation, observations on the working space and interviews and questionnaires conducted with the personnel of divisions belong to the general methods used to control safety culture level.

The following factors were considered during monitoring of the documentation:

1. Management:
   - Safety statements;
   - Distribution of safety information to the personnel;
   - Meetings and discussions related to the safety culture;
   - Distribution of visual support tools;
   - Organization of the “safety culture day.”

2. Support of the safety culture level:
   - Distribution and definition of responsibilities;
   - Provision of fire safety;
   - Provision of personal safety;
   - Provision of environmental safety;
   - Provision of radiation safety.

3. Operation:
   - Compliance of the activities to the safety guidelines on NPP;
   - Monitoring of the equipment status as well as safety conditions in the buildings.

4. Technical service and repairs:
   - Organization and provision of the repair and service;
   - Control of the resources assigned and spent on service and repair.

5. Training of the personnel of NPPs as well as personnel of contractors.

6. Quality control including independent accounting and auditing, analysis of the results of the auditing and management self-assessments.

Observations have also been done on the workplace of the personnel including the times of shift changes, during meetings and briefings, during training, examinations and lectures, during interactions with the management and control of the equipment by the employees.

The major objectives of such inspections include support of the correct (positive) behavior and correction of the behaviors which do not correspond to the guidelines. During the last monitoring in April 2012 we have observed 126 examples of positive behaviors 221 cases of violation of the guidelines, and 60 recommendations to improve the situation.
Additionally to the monitoring guidelines PM-D 0.26.217-11, in comparison to the previous monitoring guidelines, the analysis of the statements in different areas such as area on nuclear safety, of quality assurance, of ecology, of radiation safety, radiation wastes, of information technologies, human resources and others.

Statement in the environmental area for example includes:

- Improvement of environment protection;
- Improvement of the monitoring of the environmental situation;
- Reduction of the quantity of discharge to the open environment;
- Development of the guidelines for the protection of the environment.

The management of every NPP has to prepare the „Statements of the management of NPP“.

For example, the statement of the management of South-Ukrainian NNP has 12 statements focused on different areas of activities of NPP.

During monitoring of 2012, the questionnaires have been developed according to the methods of SCART and adapted considering the requirements of “Energoatom”. Those questionnaires have been developed by the experts of NPPs, and Directorates for Surveillance, for Quality and Production as well as by the experts of the Research and Development Center.

*Questionnaires for the last cycle of audits were as recommended by the "Guidelines for SCART", grouped by such characteristics:*
  
  - **A** - Safety - a recognized value.
  - **B** - Leadership for safety is clear.
  - **C** – Accountability for safety clear.
  - **D** - Safety is integrated into all activities.
  - **E** - Safety is learning driven.

As a result of self-assessment each plant provided the results of the analysis of answers and conclusions. To demonstrate the results of the survey based on the questionnaires mentioned above, we would like to summarize major conclusions of the survey conducted at Khmelnitzkaja NPP: In general 83.2 % of the respondents found safety culture conditions at Khmelnitzkaja NPP as good. Nevertheless, some of the factors of the safety culture were accesses by the personnel worse than others. For example only 64 % agreed that the resources available to achieve good safety culture were sufficient. Only 67% agreed that the system of rewards on NPP stimulates personnel responsibly attitude to safety. Some of the questions were assessed as difficult to answer and additional analysis of the reasons will be conducted in the near future. As the result of this analysis the questions will be simplified and adapted.

In 2010 and 2012, the survey has been conducted not only on NPPs but also in the other structural units of the “Energoatom” such as Directorates of Headquarters, Service centers, Research and Development Center, the division focusing on the construction of the two new reactors. Some of the SCART questions had to be adapted for those surveys.

Despite the fact that significance of safety culture is recognized and large work in this direction is being done, Ukraine is lacking experience and practices to apply the comprehensive systematic approach to safety culture management at NPPs. The requirements for the activities on maintaining efficiency and management of safety culture at NPP are not developed yet. The company has to implement clear procedures for achieving the goals of safety culture in the near future. "Traditional" safe operation standards are still important, but there is an urgent need to develop additional indicators that assess the important
characteristics of a positive safety culture. The following norms will be revised in the near future:

- norm for organizing activities in the field of safety culture;
- norm for the self-assessment of the safety culture conditions on the divisions of NPPs;
- norm for monitoring of the state of the safety culture at the NPPs;
- framework of action and activity plans to improve the management of the safety culture;
- norm for the assessment of the activities of the operating organizations in improving safety culture to include performance indicator;
- training materials for different structural levels of the NPPs to support safety culture approach.

These revisions will be done during the service contract of European Union Commission U1.05/09T5 “Improvement of the management of the safety culture at NAEC “Energoatom”.”