Approach to the Safety Culture in the Slovak Republic

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Abstract. The Nuclear Regulatory Authority of the Slovak Republic was established on January 1st, 1993, after division of former Czech and Slovak Federation Republic to two independent states - Czech Republic and Slovak Republic. As there were inherited four units on the site Jaslovske Bohunice and Interim Spent Fuel Storage on the same site under operation and four units under construction on site Mochovce it was necessary to keep on regulatory activities from very beginning of regulatory authority existence. The new regulator has been all time co-operating closely with IAEA and countries with developed nuclear power to cover all nuclear safety related areas including the safety culture. It is, however, to be said, that the issue of safety culture begun to be an object of considerations of Czechoslovak NPPs as early as in 1986 after issue of IAEA INSAG 1. Since that time the NPPs try to enforce the safety culture principles as a part of nuclear safety into their daily work in consensus with an utility Slovenske elektrarne, nuclear power plants and Nuclear Regulatory Authority. A purpose of the article is to provide an overview on safety culture practices at nuclear installations in the Slovak Republic./

1. Introduction

Immediately after the creation of the Slovak Republic on January 1st, 1993, all necessary state authorities had to be constituted. As there were nuclear facilities either under operation or construction on Slovak territory it was also needed to establish a relevant regulatory authority not to brake supervision upon nuclear safety of nuclear installations. Therefore the Nuclear Regulatory Authority of the Slovak Republic (UJD) was created on the same day as an independent authority on the level of ministry and started to work. Consequently the Slovak Republic joined the International Atomic Energy Agency the same year, on 27 September 1993.

At present following nuclear installations are under supervision of UJD:

Nuclear facility	Power/Type	Start up (shut down)	
- NPP A-1 Bohunice	HWGCR 150 MW	1972 (1978)	under decommissioning
- NPP V-1 Bohunice	2x VVER 440 MW/230	1978, 1980	without bubble condenser
- NPP V-2 Bohunice	2x VVER 440 MW/213	1984,1985	with bubble condenser
- NPP Mochovce	2x VVER 440 MW/213	1998,1999	with bubble condenser
- Interim Spent Fuel Storage	wet pool	1987	
- Conditioning Centre for RW: (cementation, incineration, bituminization, compaction)		1999	
- Bituminization line – experimental facility		1984	
- Incineration facility – experimental facility		1986	
- National RW disposal facility – near surface		1999	

In spite of the fact that UJD started its work in 1993 issues of nuclear safety and than safety culture have been always of main concern of NPP operators in former Czechoslovakia and

continuity had not been broken by political events and separation of the both, Czech and Slovak republics.

2. History of Safety Culture

The history of implementation of principles of safety culture can be divided in two periods. An issue of the IAEA document INSAG 1 [1] in 1986 started the first period which lasted up to approximately 1995. The management of each NPP was aware of their responsibility for the nuclear safety and an effort had been made to inform the staff of Slovak NPPs on basic documents on nuclear safety related to the safety culture area, i.e. documents INSAG 1, INSAG 3 [2] and INSAG 4 [3]. These documents were treated particularly and in frame of an education and training process the main stress was put on human factor and its links to the safety culture. To clarify the staff the main role of the individual in his approach to the safety culture was the main objective of these activities. Three main basic attributes of the safety culture – questioning attitude, a rigorous and prudent approach and communication in relation to the nuclear safety were explained. Also requirements of the NPP management to the staff in the light of safety culture were treated and clarified by both NPPs, Bohunice and Mochovce.

The second period of the safety culture implementation beginning in 1993 can be characterised by preparation of "Safety Culture Programme" at the NPP Bohunice in 1993 and issue of the "Safety Strategy" declaration related to start up preparation in NPP Mochovce. IAEA document INSAG 4 – Safety Culture was used as a basis for issue of these safety culture leading documents in both NPPs. In frame of these documents following actions were taken:

- Nuclear safety committees were created
- Task group to prepare the basic safety culture action plan was nominated
- Internal orders of the NPP directors concerning the safety culture were issued
- Safety culture self assessment groups were established
- Many explaining articles on safety culture were published in periodic NPP journals

The large inquiry on current level of the safety culture was made using a questionnaire prepared by IAEA which was used before at different nuclear installations over the world. As many as 1400 employees of NPP Mochovce were engaged to answer the questions covering eleven areas of safety culture. Based on results of the inquiry principal objectives to be achieved were determined. To reach these objectives a special training on safety culture was provided to selected staff members who now have a role of safety culture lecturers.

3. Action plans

Every year each NPP prepares the Safety Culture Action Plan [4], [5] where the activities in the area of nuclear safety and safety culture are planned. These activities are targeted to particular issues related to operation of NPP and are based on experience coming from the preceding performance of NPP. An example of the contents of one of the action plans is introduced bellow it contents may, however vary from year to year:

Safety culture plan of NPP for a current year:

1. To issue the Order of NPP director on safety culture;
2. To carry out a Safety Culture Status Analysis at NPP;
3. To organise a conference on "Approach to Safety Culture Management";

4. To organise a seminar on safety culture with a support of UJD;
5. To issue a booklets with the topic of Safety Culture for operation and maintenance personnel;
6. To incorporate continuously topics of safety culture into the training days of the shift personnel;
7. To publish a statement of NPP management on safety policy as the basic priority of all NPP activities;
8. To carry out self assessment of safety culture at individual departments and sections of NPP.

The action plan is a commitment for every organisational unit and every employee of the NPP. For each task a dead line is set down which is then controlled and evaluated. Criteria for evaluation of results are based on safety culture indicators introduced in INSAG 4. The indicators chosen are oriented to the measurable results achieved by individuals and working teams, correctness of prescribed activities, compliance with regulations and procedures, phenomena with positive motivation and comparable within determined time scale. Altogether following eleven areas were selected by safety self-assessment group:

1. Highlighting safety
2. Definition of responsibility
3. Selection of managers
4. Relations between plant management and regulators
5. Review of safety performance criteria
6. Training
7. Local practices
8. NPP supervision by management
9. Work load
10. Attitudes of managers
11. Attitudes of individuals

For each indicator a responsible person or guarantee is appointed and the way of his or her work is defined. After the evaluation of results of the action plan a proposal to improve particular areas with unfavourable development is prepared and enforced in coming period.

4. International co-operation

To further increase the nuclear safety level and strengthen the safety culture in Slovak nuclear installations international workshops were organised in co-operation with IAEA. During these seminars the lecturers of IAEA presented new trends in safety culture over the world. The main stress was put particularly on safety culture indicators - procedures of self-assessment, effectiveness of corrective actions programme and also the role of regulatory authority in the area of safety culture. The human factor and its importance in operation and complicated way to evaluate its impact in case of some operational event was analysed. These workshops have confirmed the strategy of Slovak NPPs in the area of safety culture and at the same time indicated the areas where further improvement could be achieved. Based on conclusion of the workshop the management of NPPs decided to include further tools into the process of safety culture improvement and particularly the group for self-assessment was strengthened.

5. Complementary means to improve and support the safety culture - good practices

Not only the orders, directives and action plans and similar documents are the means how to improve safety culture. Many materials supporting safety culture has been developed. Based on the safety culture action plan a booklet, based on movements „STAR" (STAR: Stop-Think-Act-Review), has been issued, where the right approach to work is explained in a simply way pointing out the fact that in many case the a work became a routine and can lead up to the failure of the human factor. There are NPP journals issued on a regular base semi-monthly or monthly where the articles on safety culture issues are published. Wall-boards are utilised to show the results of activities and achievements of the safety culture in the plant as well as evaluation and comparison of safety culture indicators. Issues of safety culture are also put to the INTRANET so that everybody has an access and may be acquainted with the news of safety culture. The pictures on appropriate places and sites are also very useful. It is sometimes better to see something than to remember it. Discussions between management or work leaders and manpower are of a great importance too because the requirements and stand points of both sides related to the objectives of nuclear safety can be clarified.

5. Conclusion

Maintaining and improvement of safety culture is the process of permanent development. It is one of principal objectives of NPP management. The efforts are focussed to keep the highest level of nuclear safety as well as personal safety. The enforcement of new elements of safety culture to daily practice through the yearly action plans helps the plant to achieve good production results. Attitudes of individuals are impacted by their working atmosphere. Clearly defined operation regulations, rules and procedures are the key to the efficient application of the safety culture and they contribute to a formation of this atmosphere and support attitudes of individuals directing to the high level of nuclear safety. The approach of Slovak NPPs to the safety culture implementation was appreciated by IAEA and representatives of Slovak NPPs are invited to participate in activities of IAEA in the area of safety culture. This is the confirmation of a right way towards economical and safe production of electricity and acceptance of public.

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