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INSPECTION PLANNING

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1 ABSTRACT

Slovenian Nuclear Safety Administration (SNSA) division of nuclear and radiological safety inspection has developed systematic approach to their inspections. To be efficient in their efforts regarding regular and other types of inspections, in past years, the inspection plan has been developed. It is yearly based and organized on a such systematic way, that all areas of nuclear safety important activities of the licensee are covered. The inspection plan assures appropriate preparation for conducting the inspections, allows the overview of the progress regarding the areas to be covered during the year. Depending on the licensee activities and nature of facility (nuclear power plant, research reactor, radioactive waste storage, others), the plan has different levels of intensity of inspections and also their frequency.

One of the basic approaches of the plan is to cover all nuclear and radiological important activities on such way, that all regulatory requests are fulfilled. In addition, the inspection plan is a good tool to improve inspection effectiveness based on previous experience and allows to have the oversight of the current status of fulfillment of planned inspections. Future improvement of the plan is necessary in the light of newest achievements on this field in the nuclear world, that means, new types of inspections are planned and will be incorporated into plan in next year.

2 INTRODUCTION

Slovenian Nuclear Safety Administration (SNSA) has a department for inspection and control, which is responsible for the control and enforcement measures on the field of nuclear and radiological safety. Inspection department has four inspectors and the head of department, who coordinates the inspection work.

Inspection department is competent to perform inspections on the following nuclear facilities:

- **Nuclear Power Plant Krško;**
- **research reactor TRIGA Mark II at the “Jozef Stefan” Institute;**
- **central republic storage of low and medium radioactive waste at Brinje;**
- **depository of radioactive waste (Boršt and Jazbec) from uranium mine Žirovski vrh.**

Additional responsibility for the SNSA inspection department is transportation of radioactive materials. This department controls the transportation of industrial radioactive sources and radioactive waste.

In order to be more effective and to perform inspections on the systematic way, inspection department started to prepare its inspection plan on the yearly basis since 1994. The basic approach and philosophy of inspections is taken from US Nuclear Regulatory Commission documents and its Master Inspection Plan. Since the most important Slovenian nuclear facility NPP Krško was designed, constructed and operates by adopted US Nuclear rules and legislation, the use of US approach to the inspections is, regarding SNSA experience, appropriate.

Inspection plan is organized on the such way that is applicable on all nuclear facilities, by its basic principles. Depending on the nuclear facility specific modifications in the plan content are made.

3 ORGANISATION OF THE INSPECTION PLAN

The inspection plan is structured and organized by the following main sections, describing:

- **types of inspections:** regular inspections, announced or unannounced inspections, inspections in the case of unusual event (nuclear or radiological safety related), follow-up inspections, inspections with inspectors from other competent organizations, new types of inspections under development (team inspections, risk-based inspections);
- **baseline inspection scope:** a set of inspection topics, that has to be inspected on the regular bases and are, from the nuclear and radiological safety point of view, very important;
- **extended inspection scope:** inspection to topics that appears in the case of special circumstances, like modifications, upgrade or change of procedures, new approaches to the testing, outage activities, emergency planning and preparedness and others.

The inspection plan contains also the frequency of inspections. Generally, the baseline inspection scope is performed two times per week and is actually oriented as much as possible to control the daily operation and activities under progress.

Extended inspection scope frequency varies during the year and is directly connected with the status of nuclear facility.

Inspection plan contains the control of the NPP Krško on the days, when there is no inspector on-site. Through telephone calls the inspectors are notified by operating personnel about facility status. In the case that there is an evidence of conditions and circumstances that might jeopardize nuclear and radiological safety, a prompt inspection on the same day is made.

During the NPP Krško outages one inspector is permanently present on-site and performs inspections in accordance with Inspection Plan.

4 BASELINE INSPECTION SCOPE

The listing of baseline inspection scope is as follows:

- **the control of administrative acts/decrees fulfillment by the licensee;**
- **operational safety control and assessment;**
- **safety systems walk down;**
- **safety systems performance testing;**
- **main control room activities;**
- **operational control requests fulfillment;**
- **engineering activities under progress;**
- **maintenance activities;**
- **radiological protection;**
- **spent fuel pit status;**
- **refueling activities;**
- **outage activities;**
- **proper response in the case of emergency;**
- **control of the progress of the opened regulatory requests;**
- **control of the training activities;**
- **effectiveness of the quality assurance system.**

5 EXTENDED INSPECTION SCOPE

The list of extended inspection scope is as follows:

- **activities for the refueling;**
- **cool down and start up of the reactor;**
- **fire protection activities;**
- **preparation for the operation during winter period;**
- **nuclear fuel integrity;**
- **safety during shutdown;**
- **radiological monitoring;**
- **radiological protection organization;**
- **personal radiological doses;**
- **radiological waste and its treatment;**
- **readiness for the emergency situation with emergency exercises;**
- **physical protection;**
- **safety important modifications evaluation;**
- **qualification of the subcontractors;**
- **special inspection topics suggested by the international missions.**

6 INSPECTION MANUALS

For most important of the above listed inspection topics the SNSA inspection division has already developed inspection procedures. All procedures are written in same format and are approved by the SNSA Director.

Inspection procedures are written on consistent way, that means short most important instruction are written in the following three steps:

- **the objectives and goals of the inspection;**
- **requests that has to be fulfilled prior to the inspection (preparation phase);**
- **necessary inspection actions that has to be done during the inspection.**

Inspection procedures serve inspectors as a general guide for performing the inspection and are specially helpful during preparation phase. However, inspectors have always the possibilities to modify the inspection steps and to perform such actions, that will result in consistent, objective conclusions. In the inspection procedures are specially stressed out those actions and areas inside inspection topic, which are of the greatest importance for nuclear and radiological safety.

7 EXPERIENCE

Based on the experience of several inspections performed following Inspection Plan in previous years it is clear, that the existing way of planing inspections is efficient and helps to have good overview of the inspection topics, that are already been discussed or have to be discussed in future.

The inspection topics from the base inspection scope are actually covered by inspections permanently and gives inspectors good overview about nuclear and radiological safety status of the plant. Extended inspection scope topics are not discussed so frequently; mainly due to the reason that they requests more time for the preparation and on the other hand they are not often relevant because of the plant status and ongoing activities.

For the other nuclear facilities it was necessary to modify the Inspection Plan to their specific situation and mode of operation.

Using Inspection Plan for the inspection planning it is more easy to develop short term plan with regard to safety important topics. The overall control of inspection activities is using Inspection plan on the higher level, that means, coordination of inspector is better and human resources are more efficiently used for the given purpose.

It is a practice to inform the licensee with the Inspection Plan and also with the planned inspection topics, usually a week in advance. This is not necessary, but allows licensee to assure presence of responsible, qualified personnel at the inspection. Through this the efficiency of consumed inspection time is better. It is important to stress out, that inspection topics like witnessing safety related testing, system walk downs and visits in main control room are not announced. Inspector has to meet as much as possible the realistic situation, to have the possibility to make objective conclusions.

8 FURTHER PERSPECTIVE

Based on gained experience, contacts with inspection offices in other nuclear countries and own ideas, the following parts of the Inspection Plan will be improved or added in near future:

- **all inspection topics will be coded:** codes will allow more easy to allocate the inspection topics in the Inspection Plan trough matrix form;

- **some special topics will be added:** nuclear world experience and reporting showed that new areas appear that have to be inspected (plant safety assessment, design bases changes, application of new developed techniques etc.);
- **operational safety inspections** will be performed more frequently and into detail;
- **risk based inspections** will be added, after adequate training and preparation, based on the specific probabilistic safety assessment results;
- **team inspections** will be performed on the augmented scope on previously selected safety important issues;
- **event investigation** inspections will be added.

From the above listed Inspection Plan improvements it is clear that more efforts are necessary regarding training and inspector qualification. Inspection plan has to be yearly modified regarding current status of the nuclear objects and has to reflect the overall SNSA orientation and circumstances on the nuclear and radiological safety field, specially when the new Slovenian Act on nuclear and radiological safety will be in force.

9 REFERENCES

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