Nuclear Safety Council (BOE 281, of 23/11/2007)

Nuclear Safety Council's INSTRUCTION IS-15, of 31st October 2007, on the requirements for monitoring the effectiveness of maintenance at nuclear power plants.

Level: Instruction

TEXT

Article 2.a) of Law 15/1980, of 22nd April, creating the Nuclear Safety Council, confers on this Government Agency, after the modification introduced by the First Additional Provision of Law 14/1999, of 4th May, on Public Rates and Prices by Services rendered by the Nuclear Safety Council, the power to "prepare and approve Instructions, Circulars and Guides of a technical nature relating to nuclear and radioactive facilities and nuclear safety- and radiological protection-related activities" in relation to the safe operation, i.e. without undue risks for people or the environment, of nuclear and radioactive facilities.

In the limits and conditions of the operating license granted to nuclear power plants, the Nuclear Safety Council has been requiring, on a single-case basis, the licensees of said facilities to implement a process for measuring the effectiveness of their maintenance practices, attaching the requirements called for to give effect to the compliance methodology indicated in UNESA's document RM-12-15897-E, Rev. 3, as supplementary technical instructions.

The reason for the approval of the present Instruction is the need for a general regulation of the criteria applied by the Nuclear Safety Council for requiring a system for monitoring the effectiveness of maintenance practices in nuclear power plants.

In order to make complying with the present instruction easier as well as to establish an acceptable methodology for said compliance, the Nuclear Safety Council approved Safety Guide GS 1,18 "Measuring the effectiveness of maintenance in nuclear power plants" on 2007.

By virtue of the all the above and in accordance with the legal authorisation envisaged in Article 2, Section a), of Law 15/1980, of

22nd April, creating the Nuclear Safety Council, according to the wording granted by the First Additional Provision of Law 14/1999, of 4th May, prior consultation of the affected sectors and after the appropriate technical reports,

This Council, during its meeting on the 31st of October of 2007, has agreed the following:

First. Purpose and scope of application.- The purpose of this Instruction is to set the criteria applied by the Nuclear Safety Council for requiring licensees of nuclear power plants to monitor the effectiveness of their maintenance practices. The requirements established therein are applicable to all conditions of plant operation.

Second. Definitions.- The definitions of the terms and concepts contained in the present Instruction match those contained in the following Regulations:

Law 25/1964, of 29th April, on Nuclear Energy (BOE no. 107, of 4/5/1964, Second Article).

Law 15/1980, of 22nd April, creating the Nuclear Safety Council.

Royal Decree 1838/1999, of 3rd December, approving the Regulation governing nuclear and radioactive facilities (BOE no. 313, of 31/13/1999).

In addition, the following definitions apply within the context of the present Instruction:

Maintenance activities: all the activities associated with the planning, scheduling, execution and performing of post-maintenance testings and return-to-service, during tests and preventive or corrective maintenance.

Performance: when used in the context of the setting of criteria and the monitoring of the compliance therewith, it includes availability and reliability and/or condition, as appropriate.

Condition: a specific parameter of the performance of a train, component or system that can indicate the functionality, operability or behaviour of a piece of equipment (e.g. wall thickness, vibration, ductility, leaks, electrical resistance, etc.).

Availability: period of time during which a structure, system or component (SSC) is capable of fulfilling is function. Its numerical complement, unavailability, is frequently used. It can also be expressed as a fraction of the total time during which the SSC might be required to perform its function.

Reliability: measure of the expectation (assuming the SSC is available) that a SSC will perform its function when required at any future instant in time.

Maintenance: set of functions required to preserve or restore the safety, reliability and availability of plant structures, systems and components. Maintenance not only includes activities traditionally associated with the identification and correction of real or potentially degraded conditions, i.e. repair, surveillances, diagnosis and preventive measures, but extends to all support functions needed to perform these functions.

Preventive maintenance: planned, periodic and predictive maintenance actions that are taken prior to the failure of the structure, system or component in order to keep the SSC within the expected operating conditions by controlling its degradation or failure.

Corrective maintenance: actions whose purpose is to restore the functional capacity of a SSC and which are carried out when faced with emergent operational situations where deficiencies or functional failures are observed in the SSC.

Third. Nuclear Safety Council's criteria for monitoring the effectiveness of maintenance practices in nuclear power plants.

3.1 Each holder of the operating license of a nuclear power plant must monitor the performance or condition of the structures, systems and components (SSCs) against goals defined by the licensee itself, in a manner sufficient to provide reasonable assurances that these SSCs - the scope of which is defined in the fourth Paragraph of the present Instruction - are capable of fulfilling their intended functions.

Such goals must be established commensurate with their significance for safety and taking into account, where appropriate, the industry-wide operating experience.

The present Section is also applicable to nuclear power plants in the period of permanent cessation of commercial operation and until the dismantling phase.

3.2 The monitoring specified in the preceding Paragraph will not be required when it has been demonstrated that the performance or condition of the structures, systems and components is being effectively controlled by means of a preventive maintenance programme such that the SSCs are still capable of fulfilling their intended function.

The decision on the need for the monitoring and the establishment thereof will be based on a continuous evaluation process, and a maximum period of three months for the adoption of measures not being exceeded, once signs of an improper control of the performance of the SSC are detected.

3.3 The activities for monitoring the performance or condition of structures, systems and components and their associated goals, as well as preventive maintenance activities, must be evaluated every operation cycle, the interval between evaluations not exceeding 24 months. The evaluations must take into account, where appropriate, the industry-wide operating experience. Where necessary, adjustments shall be made to ensure an appropriate balance between the goal of preventing SSC failures via maintenance against the goal of minimizing SSC unavailability via monitoring and preventive maintenance activities.

3.4 Before performing maintenance activities (including but not limited to surveillances activities, post-maintenance testings and preventive and corrective maintenance activities), the licensee of the facility must assess and manage the increase of risk resulting from the proposed maintenance activities. The scope of the assessments may be limited to those SSCs that a risk-informed evaluation process has demonstrated to be important for public health and safety.

The evaluation to be conducted may be quantitative, qualitative or a mix of both, depending on the significance for safety as well as the circumstances involved, although the evaluations must become more precise as technological resources evolve and experience increases.

Fourth. Scope of the monitoring activities.- The scope of the monitoring programme specified in the third Point of the present Instruction must include the following safety-related and non-related structures, systems and components:

4.1 Plants in operation.

SSCs that must remain functional during and after a design-basis accident to ensure the integrity of the reactor coolant pressure boundary, the capacity to shutdown the reactor and maintain it in a safe shutdown conditions, or the capacity to prevent or mitigate the consequences of accidents that could give rise to an undue risk for the health and safety of workers and the public.

Non-safety related SSCs responsible for mitigating accidents or transients or used in the plant's emergency operation procedures.

Non-safety related SSCs, whose failure could prevent other safety-related SSCs from fulfilling their safety function.

Non-safety related whose failure could cause a reactor scram or the actuation of a safety-related system.

4.2 Nuclear power plants in the period of permanent cessation of commercial operation until the dismantling phase.- The licensee must monitor the performance or condition of structures, systems and components associated with the storage, control and maintenance of spent fuel in safe conditions in a manner sufficient to provide reasonable assurances that such SSCs are capable of fulfilling their intended functions.

Fifth. Documentation.- The licensees of nuclear power plants shall write a cycle report that includes the activities carried out in compliance with Section 3.3 of the present Instruction. This report must be sent to the Nuclear Safety Council within six months after the completion of the cycle object of evaluation.

Sixth. Application of the present Instruction.- In addition to the provisions of the present Instruction, for its best interpretation and as a form of compliance acceptable to the Nuclear Safety Council, the licensees of nuclear power plants may have recourse to Safety Guide GS-1.18 "Measuring the Effectiveness of Maintenance in Nuclear Power Plants".

Seventh. Infractions and sanctions.- The present Nuclear Safety Council Instruction is binding in accordance with that established in Article 2.a) of Law 15/1980, of 22nd April, creating the Nuclear Safety Council, such that the failure to comply with it shall be punished in accordance with the provisions of Articles 91 to 95 of Law 25/1964, of 29th April, on Nuclear Energy.

Sole Repealing Provision.

Any rule of equal or lower level that opposes the present Instruction is repealed.

Sole Final Provision.

The present Instruction shall come into force on the day following that of its publication in the "Official State Gazette".

In Madrid, on the 31st of October of 2007.- Carmen Martínez Ten, the President of the Nuclear Safety Council.