

INSTRUCTION IS-11, of February 21st 2007, of the Nuclear Safety Council, on licenses for operating personnel of nuclear power plants.

SPANISH NUCLEAR SAFETY COUNCIL (Official State Gazette No. 100, dated 26 April 2007)

Article 2.a) of Law 15/1980, of April 22nd, creating the Nuclear Safety Council, following the modification introduced by the first additional provision of Law 14/1999, of May 4th, on Public Prices and Fees for Services Rendered by the Nuclear Safety Council empowers this public entity to «draw up and approve Instructions, Circulars and Guidelines of technical nature relating to nuclear and radioactive facilities and to activities relating to nuclear safety and radiological protection», in order to guarantee the safe operation, i.e. the operation without undue risks for persons or the environment, of nuclear and radioactive facilities. Likewise, the said article 2.a) has recently been modified by Law 24/2005, specifying that the Instructions issued by the Nuclear Safety Council shall be binding following their notification or, where appropriate, their publication in the Official State Gazette.

Furthermore, the same Law 15/1980 assigns to the Nuclear Safety Council the powers to issue and renew, by means of the tests established by the said Council, the licences required by the operating personnel of nuclear and radioactive facilities, supervisors and operators, and the diplomas for the Head of radiological protection services.

To date, the Nuclear Safety Council has approved several documents including recommendations, informing the licensees of nuclear facilities and activities and of those generating ionising radiations of the parameters, procedures and methodologies applicable to the operation or handling of their equipment and installations, indicating to those responsible for such facilities and activities which systems are most adequate for application of and compliance with the regulations in force in the sector.

In this respect, in March 1986 the Nuclear Safety Council approved its Safety Guide 1.1 on «Qualifications for the acquisition and use of nuclear power plant operating personnel licences», the objective of which is to set out the requirements recommended to nuclear power plant operator or supervisor licence applicants or holders. The recommendations of this Guide have been included in the Official Operating Documents of the nuclear power plants and have thus become binding requirements.

The experience acquired, technological progress and the significant repercussion of this issue on the safety of the plants have contributed to the need to provide support for the legal framework established in the Regulations on Nuclear and Radioactive Facilities (R NRF), approved by RD 1836/1999, of December 3rd, for nuclear power plant Operating Personnel Licences by means of the present Instruction. Unlike the recommendatory nature of the aforementioned Guide, this Instruction is by nature and

rank a general administrative provision, as a result of which it is binding upon all persons and entities included within its scope of application.

Pursuant to the above, and in keeping with the legal entitlement contemplated in article 2.a) of Law 15/1980, of April 22nd, establishing the Nuclear Safety Council, in accordance with the wording of the first additional provision of Law 14/1999, of May 4th, following consultations with the affected sectors and in the wake of the appropriate technical and legal reports, this Council decreed as follows during its meeting of February 21st 2007:

One. Scope of application.-

The present Instruction is applicable to the licensees of nuclear power plants, to all persons holding a nuclear power plant operator or supervisor licence, as defined in the Regulations on Nuclear and Radioactive Facilities (RNRF), and to all persons purporting to obtain such a licence.

Two. Operating personnel licences.

1. Types of licences.-As established in Title V of the Regulations on Nuclear and Radioactive Facilities (RNRF), the nuclear power plant (NPP) control room operating personnel must possess a supervisor or operator licence issued by the Nuclear Safety Council (CSN). The supervisor and operator licences shall fulfil the following:

The personnel directing the operation of a nuclear power plant (NPP), operation being understood as any manoeuvre affecting reactivity, the reactor power level, the integrity of the barriers against the release of radioactive material or the systems in charge of ensuring them, and those operating from the control room or from the remote shutdown panels under the direction of a supervisor, shall be in possession of a specific licence issued by the CSN. There shall be two types of licences:

a) Supervisor licence (SL), which enables the holder to direct the operation of the NPP, in accordance with its operating procedures, including the activities of licensed operators, within the limits and conditions defined by the official operating documents. It also enables the holder to operate the control and protection devices under specific circumstances contemplated in the procedures or necessary to ensure nuclear safety. The SL enables the holder to occupy the posts of shift supervisor, control room supervisor, shift chief or assistant shift chief, depending on the denomination established in the operating regulations of each NPP. The SL also enables the holder to supervise core alterations and fuel movements.

b) Operator licence (OL), which enables the holder, under the immediate direction of a supervisor, to operate NPP control and protection devices from the control room or from the remote or local shutdown panels where appropriate, in accordance with the plant operating procedures. Likewise, and if so requested, it enables the holder to supervise core alterations and fuel movements. The OL enables the holder to occupy the posts of reactor operator (RO), turbine operator (TO) and, if requested, to supervise core alterations and/or fuel movements, and may be requested and issued with the limitation of only one or several of the said job posts to be performed.

Core alterations and the movement of fuel, including the loading and unloading of fuel and its transfer, shall need to be supervised by a licence holder not having assigned any task other than the supervision of such activities. Exceptionally, an operator licence may be requested and issued for the supervision of new fuel movements, for the personnel of the fuel supplier company, this assigning the capacity to supervise the unloading of the new fuel and its dry storage on the NPP site, as long as the applicable general and specific requirements included in this Instruction are met.

Exempted from the obligation to hold a licence shall be those persons that, in the presence and under the direction of a licensed operator or supervisor, carry out practical training as part of an operator or supervisor training programme, as long as they have previously carried out initial training on an adequate full-scope simulator accepted by the CSN for the NPP for which the licence is sought.

The detailed functions of each job post shall be defined in an administrative operating procedure.

Without prejudice to what is established in the RNRF, the official operating documents of each plant shall establish the number of supervisor and operator licences that should be in service at each moment in time, in accordance with its technical and administrative characteristics and with the functions assigned to the posts of supervisor and operator. The total number of licences shall be sufficient, among other considerations, to allow for compliance with the licensed personnel initial and on-going training programmes. Once the definitive shutdown of an NPP has been declared, the CSN shall determine the number and class of licenses required and the corresponding requirements.

2. Obligations and faculties of licensed personnel.-With regard to the obligations and faculties of licensed personnel, consideration should be given to the following:

1. The supervisor shall be obliged to direct operation guaranteeing compliance with the technical specifications, the operations regulation, the site emergency plan and any other official document of the facility relating to its operation. He shall likewise adhere faithfully to the operating standards contained in the operating procedures, an updated copy of which shall be kept permanently in a previously established location. Whenever there is no procedure for the performance of a given operation, the supervisor shall draw one up prior to performance and include it in the operating log. In urgent situations, he shall adopt whatever measures he deems to be appropriate, recording these in the said log.

2. The operator shall be obliged to operate the control and protection devices under the direction of the supervisor and, if entitled to supervise fuel movements, shall supervise alterations to the core and/or movements of the fuel, in compliance at all times with the technical specifications, the operations regulation and any other official document of the facility relating to its operation.

3. The supervisor of a nuclear power plant shall be empowered and obliged to interrupt the operation of the facility at any time, both in the situations contemplated in the technical specifications and in situations of manifest danger not contemplated therein, if he considers that the conditions of due safety of the facility have been reduced. This

same power and obligation shall apply to the operator in the event of absence from the control room of a person holding a supervisor's licence.

4. The shift supervisor may not leave the NPP. The shift operator may not leave the control room without authorisation from the supervisor and without being replaced by another operator or, exceptionally, by the supervisor temporarily after having initiated the corresponding immediate action to maintain the composition of the shift crew. Unless momentary, these replacements and their duration shall be recorded in the Operating Log.

5. The holder of a SL or OL shall be obliged to participate successfully in the initial and on-going training programme and to perform the annual tests and practical drills established therein to demonstrate his capacity to occupy his post. The licensee of the facility shall provide the means and resources required for compliance with the initial and on-going training programmes for the licensed personnel under his charge.

6. The holder of a SL or OL may not perform his functions under the effects of alcohol or any other type of drug or substance that might adversely affect his physical or mental conditions and, therefore, the competent and safe fulfilment of his licence obligations. If the licence holder does not voluntarily undertake the tests indicated, on request by the licensee or the Nuclear Safety Council, to check his conditions of suitability, the licence may be withdrawn following the appropriate proceedings by the CSN.

7. The holder of a SL or OL shall accredit his suitability for the performance of his job post, including the requirements relating to physical health and psychological stability, as well as verification of his aptitude as a worker professionally exposed to ionising radiations, the above by means of the corresponding annual medical check-ups.

8. Supervisors and operators shall be obliged to notify the licensee of the facility, and in turn shall be entitled to be notified by the latter, of whatever defects exist in their opinion in the official documents of the authorisation, the operating procedures or the plant components and equipment.

9. The licensed personnel involved in the operating shift shall have knowledge of and authorise the work performed at the facility, whenever such work directly affects its operation.

Three. Qualifications of licensed personnel.-

The licensee of the NPP shall possess initial and on-going training programmes for the licensed personnel, the general aspects of which shall be included in the Operating Regulation (OR). A detailed description of the licensed personnel initial and on-going training programmes shall be submitted to the CSN at least 2 months prior to their implementation for analysis and acceptance by the Licences Tribunal, if the latter considers this to be appropriate. The annual training reports shall contain sufficient information on the aforementioned programmes, as well as on any deviations from them.

Safety Guide 1.1 (GS-1.1) includes the minimum and acceptable conditions according to which the initial and on-going training programmes are to be drawn up. However, other alternative methods shall be acceptable for the same objective to be achieved, as long as such methods arise from the application of a systematic methodology incorporating at least the following elements:

1. Systematic analysis of the tasks to be performed in each job post.
2. Determination of the learning objectives, deriving from an analysis describing the adequate performance expected following delivery of the initial and on-going training.
3. Design of the initial and on-going training programme and implementation thereof, based on the learning objectives.
4. Evaluation of the degree of personal compliance with the learning objectives mapped out.
5. Evaluation and revision of the initial and on-going training programme, based on the performance of the personnel in their job posts.

These programmes shall be evaluated annually and revised appropriately by the licensee, in order to guarantee their effectiveness, reflect the experience of the nuclear industry and the modifications affecting the NPP, procedures, standards and quality assurance requirements. The licensee shall keep records of these programmes in files guaranteeing their integrity and accessibility.

Qualifications for application for a Supervisor or Operator Licence

1. Academic background.-Candidates for an SL or OL must possess the academic qualification required by the RNRF for the licence requested. Candidates for an OL must be university graduates or hold an equivalent qualification. However, if the licence applied for is limited to the functions of the TO, it will suffice to accredit a qualification no lower than second grade technological vocational training or an upper grade technological training cycle complemented with comparable and adequate training in nuclear safety and radiological protection, as well as experience in the post of auxiliary operator at the plant, all of which shall be subject to acceptance by the corresponding Licences Tribunal. If the licence applied for is limited to the supervision of fuel movements, the minimum qualification required shall be intermediate grade or equivalent.
2. Specific training.-The licensee of the NPP shall draw up an initial training programme for licence candidates, developing the basic programmes contained in the NPP training plan and the criteria established in this Instruction.

The specific training programmes shall include knowledge appropriate for the licence requested on the scientific and technological fundamentals applicable to NPP's, reactor physics and operating principles applicable to the NPP, the technology of the NPP, the functioning and operation of the NPP, radiological protection, standards and operating documents. If the licence applied for enables the holder to supervise core alterations and fuel movements, or is limited to the movement of new fuel, the specific

training programme shall contemplate the theoretical and practical knowledge required to guarantee that the core alterations and fuel movements, or where appropriate the movement of new fuel, are carried out under safe conditions and with adequate margins, along with the correct capacity to respond to the postulated incident or accident situations.

The number of hours dedicated to specific training within the framework of tutor-controlled study, by personnel with adequate and accredited training and experience, shall have a limitation reflected in the training procedures and that, in any case, shall not exceed half the time dedicated to theoretical training, in the case of SL candidates, and twenty-five percent for candidates for the OL without limitations or limited to the post of RO. For candidates for the OL limited to the post of TO or to FM, the hours of training within the framework of tutor-controlled study shall not be counted.

3. Training.-The initial and on-going training programme should contemplate training on an adequate full-scope simulator accepted by the CSN for the NPP for which the licence is sought. The hours of training on the simulator should be sufficient to guarantee the capacity to operate, control or direct the status of evolution of the plant from the job post, depending on the nature of the licence, under normal, transient and accident conditions, in accordance with the corresponding training programme. The initial training on the simulator shall include, among other things, the operating skills included in Annex 4, suitably combined with the accident sequences most contributing to risk, deduced from the probabilistic safety assessments of the facility for which the licence is sought.

For candidates for the OL, the hours of training on the simulator performed in a post not corresponding to that aspired to shall account for at most 50% for the purposes of accreditation, and the composition of the training shift shall not exceed three members. For candidates for the SL, only hours of training in the post of single shift supervisor shall be counted, except in those circumstances in which two supervisors are required for the simultaneous execution of the emergency operating procedures.

The on-the-job training for OL candidates, excluding those limited to FM functions, shall necessarily include operating practice in the control room and general practice in the plant, including the remote shutdown panel and other local panels. These practices shall in all cases be carried out under the direct surveillance and tutorship of a person holding the licence sought and under the non-delegable responsibility of the holder of a supervisor licence. In the case of SL candidates, the on-the-job training shall include practical operations training in the control room and in the plant, performing the same functions as would correspond to the candidate following awarding of the licence. These functions shall in all cases be carried out under the direct surveillance and tutorship of a person holding a supervisor licence and under the non-delegable responsibility of the shift supervisor. Furthermore, it is necessary for candidates for the OL to accredit that during their practical training period they have participated in at least one refuelling outage, performing tasks relating to the post sought. In those plants at which the Operating Permit limited to the post of TO does not require the performance of differential tasks during Refuelling, it will not be necessary to accredit practical training in refuelling during this period and it will be sufficient to inform the CSN of this circumstance.

The detailed simulator and on-the-job training programmes shall be submitted to the Licences Tribunal prior to their implementation.

If the licence applied for enables the holder to supervise core alterations and the movement of fuel, or is limited to the movement of new fuel, the scheduled training shall include the performance of practical sessions in all the tasks relating to these functions, in all cases under the direct surveillance and tutorship of the holder of an equivalent licence.

4. Experience.-OL candidates do not need to accredit previous experience; however, once the licence is awarded, the licensee should programme a period of direct effective tutorship in the control room by an experienced operator holding a licence for more than 2 years, the said period not being less than 42 days operating in complete shifts.

In the case of SL candidates, a minimum of 3 years' effective experience in the post of licensed operator will be required, although exceptionally and on decision by the Licences Tribunal a minimum experience of 2 years may be accepted. This experience may not be as an operator limited to the post of TO or for FM, and must be accredited before the licence is awarded. During this period the candidate shall have participated in the activities and manoeuvres corresponding to the post of licensed operator, such as refuelling, start-up, power increases, load variations, shutdowns and other related actions, and shall have adequately completed his initial and on-going training programme.

Four. Awarding and renewal of licences.

Licence application:

The licensee of the NPP shall inform the CSN of its intention to present licence candidates for examination prior to beginning its training programme. The request of the candidate shall be submitted personally to the President of the CSN at least 3 months prior to the foreseen date of the first examination and shall be accompanied by the following documentation:

- a) Copy of the national identity card (DNI) or passport.
- b) Information on the academic and professional background of the requester and on his experience.
- c) Declaration of the licensee of the facility setting out the missions to be assigned to the requester and its favourable appreciation of the candidate's suitability for performance thereof.
- d) Medical certificate of aptitude, issued by an occupational risk prevention service and covering the requirements of physical health and mental stability for performance of the activities corresponding to the licensed job post and those implying a risk of exposure associated with the job post.

The medical certificates for licence candidates shall specify that the physical or mental conditions of the candidate will not adversely affect the performance of his obligations

as a licensed member of the personnel; they shall likewise include a declaration of the aptitude of the candidate for work with ionising radiations, as reflected in the Regulation on Protection against Ionising Radiations.

At any moment as from application for the licence the CSN may request whatever additional information might be required for the process of awarding licences to the candidates.

Additional applications:

Those candidates who do not pass any of the examinations may request a new licence as from 2 months after the official notification of the rejection of the previous application. In addition to the updated documentation submitted with the previous application, the new request shall include a declaration from the licensee of the NPP detailing the additional initial and on-going training performed and certifying that the candidate is prepared to be re-examined.

If a licence candidate has passed two of the three parts of the examination, one of which must necessarily be the written test, he may request the validation of the parts successfully performed along with the next application, including the appropriate allegations. The Licences Tribunal may accept such exemption if it is duly justified and if no more than one year has passed since the performance of the validated tests and the new examination.

In the exceptional case of a person from a fuel supplier company holding a licence for supervision of the movement of new fuel at a nuclear power plant requesting a new licence for performance of this same function at another different plant, he may request validation of the applicable parts of training.

Awarding of licences:

The CSN shall issue operator and supervisor licences with the limiting conditions it considers to be adequate in each case, as long as the following requirements have been met:

The requesting party has been accepted by the corresponding Licences Tribunal.

Passing of the examinations and tests that the corresponding Licences Tribunal considers to be appropriate to ensure that the candidate fulfils the conditions guaranteeing the safe operation of the plant for which the licence is requested.

Compliance as of the date of awarding of the licence of the other experience and initial and on-going training requirements established.

Direct contractual relationship with the licensee of the NPP or a fuel supply company, as a prerequisite for performance of the functions covered by the licence.

Exceptionally, and when advisable in the interests of nuclear safety, the Licences Tribunal may propose the awarding of licences to persons that, while not fulfilling any

of the aforementioned requirements, accredit adequate capacity and competence for the performance of the functions described in the RNRF and in this Instruction.

Examination:

The examination for the SL or OL shall consist of a set of theoretical and practical tests. This examination shall be made up of three independent parts:

a) Written examination, aimed at checking the adequate level of knowledge of the licence candidate. This shall consist of a representative selection of questions on the knowledge, capacities and skills required for the performance of the functions corresponding to the licence in question, which shall be determined, fundamentally, from the learning objectives deduced from the systematic task analyses carried out by the licensee. Other alternative references may be the descriptive and accident analysis chapters of the Safety Analyses, systems descriptions, operating manuals and procedures, licence conditions, reportable events and other documents requested by the CSN from the licensee of the NPP. The examination questions shall be coherent with the training programme accepted by the Licences Tribunal and, if any such question were considered to be pertinent but were not included in the said programme, the licensee shall revise the latter in order to include the training necessary for it to be taken into account in future licence examinations.

For OL candidates, the examination shall include a representative sample of the subjects specified in the Specific Training section, including at least the contents of Annex I, to the extent to which they are applicable to the NPP for which the licence is sought. For candidates for the OL limited exclusively to fuel movements, the examination shall focus on aspects relating to their activities.

For SL candidates, the examination shall include a representative sample of the subjects covered in Annex I, to a depth and scope adequate for the supervisor licence, as well as of the subjects specific for the SL, which shall include at least the contents of Annex 2, to the extent to which they are applicable to the NPP for which the licence is sought.

b) Examination on the simulator, with the objective of checking the capacity of the licence candidate for the performance of his functions in the control room, with adequate levels of knowledge, capacity and skill, operating and supervising the plant systems under dynamic conditions, or directing such activities, both individually and as a member of the operating crew, and applying his knowledge in a practical manner. This test is eminently practical in nature and will be performed on an adequate full-scope simulator accepted by the CSN for the NPP to which the licence refers. In this respect, the candidate shall successively occupy the posts for which the licence sought will qualify him, forming part of a team whose composition will be proposed by the licensee of the plant to the corresponding Licences Tribunal. Candidates for the OL limited exclusively to fuel movements shall be exempted from the simulator examination.

c) Examination in the plant, with the objective of checking the candidate's adequate familiarity with and knowledge of the NPP for which the licence is sought (especially the control room), its documentation and procedures and its operating practices. For

candidates for the OL limited exclusively to fuel movements, the examination shall focus on aspects relating to their activities.

On request by the licensee of the NPP, the candidate for the OL without limitations may additionally sit a written supervisor examination, as long as he meets the necessary requirements of the specific supervisor training programme. If in these circumstances the OL candidate passes this written supervisor examination, the validity of the licence shall be for six years. For other examinations as an SL candidate, he shall satisfactorily meet the experience and training requirements foreseen in this Instruction.

Each of the parts of the examination shall be eliminatory, unless the Tribunal considers the subsequent and exclusive recovery of any of its parts to be acceptable. The Licences Tribunal may weigh the contents of the examinations depending on their significance for safety. For the drawing up of the corresponding examinations, the licensee of the NPP shall provide the documentation used in training the candidates and requested by the Licences Tribunal, within the term specified in each case by the said Tribunal.

The licensee shall inform the CSN, with 2 months' notice with respect to the date foreseen for the licence examination, of any limitations existing on the full-scope simulator, identifying the systems and functions that might be affected, for the information of the Licences Tribunal.

All the personnel involved in the process of drawing up and applying the licence examinations shall be obliged to undertake and guarantee the integrity and confidentiality of such examinations.

Licence Renewal:

Operator and supervisor licences shall be renewed for the period established in the RNRF, with the exception of the temporary limiting conditions that the Licences Tribunal considers to be appropriate. In this respect, the licence holders shall request such renewals at least two months before the date of expiry of the licence, attaching certification from the licensee of the NPP accrediting the following:

That the holders have continued to exercise effectively and with due competence the specific missions of their licence, detailing all periods of inactivity that have taken place, certifying that the conditions of activity established in the Term of Validity and Suspension of Licences of this Instruction have been met and, in any case, that a year and a half of accumulated inactivity has not been exceeded during the period ending.

That the holders have successfully attended the initial and on-going training programme.

That the holders continue to be qualified as apt for the licensed job post and for work with ionising radiations (or apt in certain conditions, which should be indicated) by an occupational risk prevention service, specifying that their physical or mental conditions will not adversely affect the performance of their obligations as licensed personnel.

In awarding renewal, the Licences Tribunal will evaluate all the information available on the actuations of the requester, including any notification of non-compliance or performance of negligent acts of which it has notice.

Initial and on-going training of licensed personnel:

The holder of an SL or OL shall attend a programme of initial and on-going training, drawn up by the licensee of the NPP in order to ensure the maintenance of an adequate level of knowledge, capacity and skill to satisfactorily perform his functions. In designing this training, consideration shall be given to the criteria established by the CSN, and it may be undertaken in refresher cycles, which shall not exceed two years. Likewise, the comments provided by the operating licence personnel shall be taken into account.

This programme shall include classroom sessions for the refreshing of general and specific knowledge of the NPP (Annexes 1 and 2) and that shall, in any case, emphasise the scope and depth of the aspects included in Annex 3, along with an updating of the holder's operating capacity, distributed regularly and continuously throughout the period, by means of the delivery of operating experience and modifications to the plant. Furthermore, there shall be a guarantee of periodic recapitulation of the contents of all the off-normal and emergency procedures. As a result, the licensed personnel shall demonstrate satisfactory knowledge of the design changes, procedures and licensing conditions of the NPP, as well as of the components, systems, physical principles, limits and procedures intervening in the operational skills trained on the simulator.

Likewise, this programme shall contemplate annual training on the full-scope simulator adequate and accepted by the CSN for the plant, of a duration suitable to ensure compliance with the training objectives. The hours of training shall be effective in the job post to which the license refers. In the case of the OL without limitations, the training shall be carried out alternating between the posts of RO and TO and this shall guarantee training on all the operating scenarios foreseen from each licensed operator post. The annual training on the simulator shall include, among other things, refreshment on the operating skills included in Annex 4 (which may be validated as regards training from the control room by actual manoeuvres that have taken place), adequately combined with the accident sequences most contributing to risk, deduced from the probabilistic safety assessments.

For the OL limited exclusively to fuel movements, the initial and on-going training programme shall focus on the aspects relating to these activities.

The initial and on-going training programme shall include an evaluation of the individual performance of the licensed personnel, which shall include written and practical tests to certify their capabilities. In this respect, annual practical tests shall be carried out on the full-scope simulator, which in addition to individual assessment shall include the overall evaluation of the operating shift. Exceptionally the CSN may carry out complementary tests and practical drills with this same objective. Likewise, if the satisfactory performance of the initial and on-going training is not demonstrated, the licensee shall adopt the measures necessary to guarantee adequate preparation for the safe performance of their functions, without excluding the possibility of the shift

being temporarily removed. In such cases the licensee shall inform the Licences Tribunal within 15 days, the latter having the powers to require that additional initial and on-going training be delivered before the licence holder may once again perform the functions assigned to him by the said licence.

The initial and on-going training programme and the procedures and criteria used in its preparation shall include a systematic process for the assessment of the suitability of the licensed personnel. This process shall include the systematic observation and evaluation the activities and competence of the said personnel, both in the control room and on the simulator, carried out by supervisors of their tasks or training personnel. This information, including the programme foreseen, the criteria used in its preparation, deviations from the programme in previous years and the results of the systematic process of assessing the suitability of the programme, shall be communicated to the CSN in the corresponding annual training reports.

The licensee of the NPP shall carry out medical reviews of all the licensed personnel at least annually, in order to guarantee the maintenance of their physical and mental conditions, and those relating to the risk of exposure. The licensee of the NPP shall submit to the CSN the annual medical certificates, issued by an occupational risk prevention service, when they reflect a change in medical aptitude, within 15 days of knowledge of such change becoming available.

The licensee shall include his annual training programme, and the corresponding list of compliance with the cyclic programme, in the Annual Training Report for supervision by the CSN.

Five. Period of validity and suspension of licences.-

The licences shall lose their validity in the following cases:

- a) Due to expiry, if they have not been duly renewed.
- b) Due to cancellation, following the appropriate proceedings, in the following cases, when safety or radiological protection is affected:
 1. Due to loss or substantial reduction of the physical or mental stability of the holder, accredited by means of the corresponding medical certificates.
 2. Due to the holder's not voluntarily accepting the performance of the tests indicated by the licensee or the Nuclear Safety Council to check his conditions of aptitude.
 3. Due to serious voluntary or negligent action or omission in the performance of his functions.
- c) Due to closure of the installation.-The Nuclear Safety Council may suspend the licences in the following cases:
 - 1) For reasons of safety.

2) Due to loss of the technical qualifications for the performance of the holder's functions.

3) As a precautionary measure, when the CSN has initiated sanctions proceedings, if deemed to be appropriate.

Licences shall be suspended for reasons of inactivity when the job post for which the licence is issued is not performed for a continuous period in excess of 6 months. In this case the following conditions of activity should be met for recovery of the validity of the licence prior to the holder's being re-incorporated into the shift:

a) Performance of complementary training based on sessions on the plant full-scope simulator, amounting to 20 hours on the simulator for each quarter or fraction thereof of inactivity, as from the 6 months giving rise to the suspension.

b) A period of operation in the control room of at least 32 hours each for quarter or fraction thereof of inactivity, as from the 6 months giving rise to the suspension, doubling personnel holding and equivalent licence.

c) Maintenance of the qualification of aptitude for the job post covered by the licence and for work with ionising radiations (or aptitude under certain conditions, which should be indicated) by an occupational risk prevention service, specifying that the holder's physical or mental conditions will not adversely affect the performance of his duties as a licensed member of the personnel.

Licences limited exclusively to fuel movements shall lose their validity for reasons of inactivity when, within the period of validity, the holder does not participate in the manoeuvres covered by the licence on at least one occasion, such manoeuvres possibly being validated for another nuclear power plant on decision by the corresponding Licences Tribunal.

At any moment between granting of the licence and its expiry, the CSN may request whatever additional information might be necessary for the cancellation, suspension or modification of the licence.

Six. Necessary communications.-

In addition to the communications foreseen in the RNRF, the holder of an operator or supervisor licence shall notify the licensee of the facility of the performance of any act, voluntary or involuntary, that has a significant impact on nuclear safety or radiological protection, as soon as this is known. If the latter does not notify the Nuclear Safety Council in the timeframe established in the regulations, the licence holder shall undertake such notification. In addition, such incidents should be included in the operations log.

The licensee of the facility shall communicate in the Annual Training Report any absences from and reincorporation to the shift, along with their duration, for each of the persons of the facility holding a valid licence. Likewise, the licensee of the facility shall communicate any absence from the shift lasting more than 6 months as soon as knowledge thereof becomes available and whenever such absence occurs, as well as

compliance with the conditions of activity established in the Period of Validity and Suspension of Licences of this Instruction, with due notice prior to reincorporation in the shift.

Seven. Exemptions from this Instruction.-

The licensees of activities regulated by this Instruction who accredit the impossibility of fulfilling any of its requirements shall justify this adequately before the Nuclear Safety Council, incorporating the safety analyses and relevant documents on which such justification is based and the alternative way in which the nuclear safety and radiological protection criteria required in each case will be fulfilled.

Eight. Infractions and Sanctions

Without prejudice to the civil, penal or other responsibilities that may be incurred, the failure to comply with the provisions of this Instruction, shall be sanctions according to what is established in articles 91 to 95, inclusive, of Law 25/1964, of 29th April, on Nuclear Energy, according to the wording given by the Fifth Additional Provision of Law 54/1997, of 27th November, on the Electricity Sector, as well as by the Fifth Additional Provision of the Law 14/1999, of 4th May, on Public Prices and Fees for services rendered by the Nuclear Safety Council,

Nine. Transitory provisions.

One.-The present Instruction shall not alter the validity of the licences granted prior to its entry into force, although the renewal of such licences shall be undertaken in compliance with this standard, following the period of adaptation contemplated in its Second Transitory Provision.

For the purposes set out in the previous paragraph, operator licences in force shall not enable the holder to supervise alterations to the core and the movement of fuel until such time as such circumstances are expressly authorised through renewal of the licence, the corresponding application including documentary evidence of satisfactory completion of a complementary programme of initial and on-going training and having passed the tests established in such programme, which shall include the specific theoretical and practical aspects associated with such practices, as included in the present Instruction.

Two.-The licensees of the NPP's shall have six months, as from publication in the «Official State Gazette», to adapt their practices and procedures to the requirements of the present Instruction.

Ten. Single Repeal Provision

Any provision of equal or inferior rank that is contrary to this present Instruction shall be repealed.

.Eleven. Single Final Provision. Entry in Force.

This present Instruction shall enter in force on the day following its publication in the Official State Gazette.

This I communicate to you for your knowledge and pertinent effects

Madrid, February 21st 2007.-The President, Carmen Martínez Ten.

ANNEX 1

Content of the written examination for candidates for the Operator licence

The following sections define the generic contents for the post of Reactor Operator without limitations. Depending on the Nuclear Facility to which the Licence is applicable and the functions covered by it, this content may be modified in scope and depth.

1. Basic scientific and technological fundamentals applicable to nuclear power plants: Principles of fluid mechanics and thermodynamics of heat transfer; basic thermohydraulics. Fundamentals of chemistry. Fundamentals of the resistance of materials. Fundamentals of electricity and electromagnetism. Introduction to the regulation of control processes and elements. Mechanical, electrical and instrumentation and control components. Interpretation of flow, process, logic and wiring diagrams.

2. Reactor physics and the principles of operation applicable to the plant: Atomic and nuclear physics; fission process; neutron physics: diffusion and moderation; multiplication factor; neutron kinetics; subcritical multiplication; neutron sources; reactivity; coefficients inherent to reactivity and power defect; neutron poisons; control rod effects; operational physics of the reactor (calculations of reactivity, indications of criticality, energy balances, shutdown margin and other control room calculations). Reactor thermohydraulics and core thermal limits. Operating principles of nuclear instrumentation. Principles of resistance of materials applicable, including fracture mechanics and pressurised thermal shock. Chemistry applied to nuclear power plants. Principles of nuclear safety (defence in depth and other concepts) and radiological protection. General nuclear safety and radiological protection design criteria.

3. Technology of the plant to which the licence refers: Description, functions, general characteristics and design basis, components, operating modes (manual and automatic), signals, settings, setpoints, permissives and interlocks, instrumentation, alarms and failure modes of the following systems: core, vessel, reactivity control mechanisms, nuclear instrumentation, reactor coolant, turbine cycle, control and limitation, protection, engineered safeguards, electrical systems, support and auxiliary systems associated with the facility. Operating technical specifications applicable to these systems. Post-accident instrumentation and remote shutdown panel. Shielding, isolation and design characteristics of containment, including access limitations. Fire detection and extinguishing systems. Area and process monitors. Systems associated with refuelling and fuel pools.

4. Plant functioning and operation:

4.1 Automatic plant response under normal, transient and accident conditions. Fundamentals of plant response: thermohydraulics, reactivity, temperature, pressure, power production, load changes, chemistry of coolant and attenuation of core damage. Fundamentals of limitations on operation. Effects of loss or malfunction of systems in automatic plant response. Most important accident sequences and study of their evolution. General knowledge of Shutdown Safety.

4.2 Plant operation under normal, transient and accident conditions. General operating procedures. Systems procedures. System malfunction and failure procedures. Emergency operating procedures. Surveillance testing procedures. Administrative procedures applicable to operation. Plant behaviour with operating personnel intervention. In-house and industry operating experience (TMI and Chernobyl accidents). General knowledge of operating specifications and segregated documents. Basic principles of equipment maintenance. General knowledge of severe accidents and severe accident management guidelines.

4.3 Results of plant Probabilistic Safety Assessments (APS). Basic concepts of APS. Most significant results of APS in relation to initiating events, accident sequences and combinations of component failures and human errors (most significant minimum failure sets). Simple and common cause failure modes, unavailability due to testing and maintenance and human errors most contributing to risk. Recovery actions.

4.4 Human factors. Aspects relating to human factors for the efficient performance of the functions assigned to operating shifts, reducing human error and strengthening team work, communications and enhanced tracking of plant operation.

5. Radiological protection:

5.1 Basic principles.-Ionising radiations. Interactions between radiations and matter. Radioprotection magnitudes and units. Detection of radiation and contamination. Biological effects of ionising radiations. Dose limitation, justification and optimisation. ALARA. Protective measures (distance, time, shielding, confinement).

5.2 Radiological protection applied to the plant.-Radiological risks at the plant. Radiological Protection Manual (MPR) and procedures applicable to the post. Classification of zones, signposting and surveillance (levels of radiation and contamination. Radiation monitoring systems (process and area), objectives and operation, including alarms, automatic actions and surveillance equipment. Post-accident surveillance system. Classification of personnel, radiological surveillance and dosimetry control. Control and protection of work with ionising radiations and radioactive contamination. Procedures and equipment for the handling and storage of radioactive material and surveillance equipment. Basic knowledge of MCDE (Off-site dose calculation manual).

6. Plant operating standards and documents:

6.1 Standards.-Knowledge applicable to the plant on the following: Nuclear Energy Act, Law Establishing the Nuclear Safety Council, modified by Law 14/99, Regulations on nuclear and radioactive facilities, Regulation on protection against ionising radiations, CSN Instructions and Safety Guides and other technical standards applicable to the post.

6.2 Plant operating documents.-Operating permit. Safety Analysis. Operating Specifications (Organisation and Administrative section). Operating Regulation. Site Emergency Plan (PEI). Procedures for enactment of the PEI and applicable to the post. Quality Assurance Manual.

7. Procedures and limitations applicable to the loading of nuclear fuel (applicable only if the licence enables the holder to supervise core alterations and fuel movements): Alterations to the core, control rods and determination of internal and external effects on core reactivity. Devices and procedures for the handling of fuel: implications deriving from refuelling safety assessment, associated limitations and technical specifications; reception and inspection of fuel, storage and handling of new and spent fuel, design of handling area, fuel handling equipment, physical and administrative interlocks, foreseen incidents, procedures and processes for the control of activities; radiological protection procedures applicable to the handling of fuel; emergency procedures associated with fuel handling activities; cycle start-up nuclear testing. Area and process monitoring instrumentation; communications between the control room and fuel storage and handling areas; operation of systems from the control room in support of the fuel loading or unloading process.

ANNEX 2

Additional content of written examination for candidates to the Supervisor licence

1. Basic scientific and technological fundamentals applicable to nuclear power plants: without additional content.
2. Reactor physics and operating principles applicable to the plant: without additional content.
3. Technology of the plant to which the licence refers: Design basis of systems settings, setpoints, permissives and interlocks. Wastes generated and systems for the processing and release of radioactive effluents. Operating technical specifications applicable to the systems and their bases.
4. Plant functioning and operation:
 - 4.1 Analysis of plant response: thermohydraulics, reactivity, temperature, pressure, power production, load changes, chemistry of coolant and attenuation of core damage. Emergency Operating Procedures and their design bases. Evaluation of conditions of the facility and selection of adequate procedures during normal operating, off-normal, emergency and severe accident conditions. Application of operating technical specifications and their bases. Risk monitor. Analysis and results of functional testing. Equipment maintenance. General criteria for the declaration of a degraded condition or non-conformity.
 - 4.2 General knowledge of the evolution and phenomenological aspects of severe accidents. Core heating and meltdown. Phenomena inside and outside of the vessel. Containment behaviour. Transport of fission products. Severe accident management guidelines.
 - 4.3 Results and application of plant APS. Initiating events, accident sequences and combinations of component failures and human errors. Applications to operation of the facility. Results of quantification of risk during power operation and shutdown. Results of APS Level 2: Main accident sequences following core meltdown and significant human actions. Dominating containment failure modes.
5. Radiological protection: Sources of radiation risk during normal and off-normal operation, including maintenance activities and conditions of contamination. Liquid and gaseous effluents and solid wastes. Movement and transport of radioactive material. Public surveillance.
6. Plant operating standards and documents: Limits and conditions of the licence of the facility. Plant operating documents. Off-site dose calculation manual (MCDE). Procedures enacting the PEI and MPR applicable to the post. Procedures required for the authorisation of facility design or operating changes.

7. Procedures and limitations applicable to the loading of nuclear fuel. Alterations to the core, control rods and determination of internal and external effects on core reactivity. Devices and procedures for the handling of fuel: implications deriving from refuelling safety assessment, associated limitations and technical specifications; reception and inspection of fuel, storage and handling of new and spent fuel, design of handling area, fuel handling equipment, physical and administrative interlocks, foreseen incidents, procedures and processes for the control of activities; radiological protection procedures applicable to the handling of fuel; emergency procedures associated with fuel handling activities; cycle start-up nuclear testing. Area and process monitoring instrumentation; communications between the control room and fuel storage and handling areas; operation of systems from the control room in support of the fuel loading or unloading process.

ANNEX 3

Minimum contents for the initial and on-going training programme for licensed personnel

1. Theory and principles of operation.
2. General and specific plant characteristics.
3. Plant instrumentation and control systems.
4. Plant protection systems.
5. Plant emergency systems.
6. Normal, off-normal and emergency operating procedures.
7. Control and protection against radiations.
8. Technical specifications.

ANNEX 4

Minimum skills to be trained on the simulator for the initial and on-going training programme for licensed personnel

1. Plant start-up from cold shutdown to full power.
2. Plant shutdown from full power to cold shutdown.
3. Manual control of steam generators and feedwater during start-up and shutdown.
4. Reactor coolant boration and dilution.
5. Significant power changes, of more than 10%, with manual control of rods or recirculation flow.

6. Power changes in excess of 10% with load control.
7. Loss of coolant, including significant steam generator leakage (PWR), leakage inside and outside primary containment, large and small leaks with determination of leakage flow.
8. Loss of instrument air systems.
9. Partial and total loss or degradation of electricity supply.
10. Loss of reactor coolant flow forced and/or natural circulation.
11. Loss of normal and/or emergency feedwater systems.
12. Loss of essential services water systems.
13. Loss of shutdown cooling.
14. Loss of component cooling systems or the cooling of individual components.
15. Loss and malfunction of feedwater system.
16. Loss of condenser vacuum.
17. Loss of protection channels.
18. Control rod misalignments or drops.
19. Control rod malfunctions.
20. Situations requiring the entry of emergency boration systems.
21. Fuel cladding failures or conditions of activity in coolant.
22. Turbine and main alternator trips.
23. Malfunctions of automatic control systems affecting reactivity.
24. Malfunctions of systems affecting coolant pressure and/or volume control.
25. Reactor scrams.
26. Steamline and feedwater pipe ruptures inside and outside containment.
27. Failure of nuclear instrumentation.