

NATIONAL NUCLEAR REGULATOR



LICENCE DOCUMENT

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LD-1081	REQUIREMENTS FOR OPERATOR LICENCE HOLDERS AT KOEBERG NUCLEAR POWER STATION	3

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1. INTRODUCTION

1.1 Purpose

The document defines the duties, responsibilities and minimum training that the National Nuclear Regulator deems acceptable for reactor and senior reactor operator licence holders in order to have their licences renewed.

1.2 Scope

This licence document is applicable to all persons who have been granted reactor or senior reactor operator licences by the National Nuclear Regulator.

2. DEFINITIONS

Active involvement - Involvement of the operator licence holder in a licensed position for at least the minimum times specified in Section 5.

Active licence - An operator licence whose holder has satisfied the requirements of Section 5.

Direct supervision - A situation in which the operator licence holder has discussed and understood the intended actions of the trainee and will have positioned himself in such a manner that he may interrupt and correct the trainee's actions which he deems as incorrect or inappropriate.

Gender - The use of the male gender also means the female gender.

Licence - The current variation of Nuclear Licence No. NL-1.

Operator licence holder - An operator in possession of a current reactor or senior reactor operator licence issued by the NNR.

Licence position - The following are considered to be licence positions occupied by operator licence holders:

- Shift Manager, [Senior Reactor Operator licence holder].
- Senior Shift Supervisor [Senior Reactor Operator licence holder].
- Shift Supervisor [Reactor Operator licence holder].

The person who performs the Critical Safety Function monitoring, as required by the Functional Restoration Procedures, must be a reactor or senior reactor operator licence holder who does not fulfil any of the operator licence positions in the "Minimum Shift Composition" as listed in Attachment B.

Licensee - The holder of a current variation of Nuclear Licence No. NL-1.

NNR - National Nuclear Regulator

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Systematic Approach to Training (SAT) - A systematic five-stage process used to produce, deliver and implement performance-based training and qualification programme. The five stages are:

1. Systematic analysis of the needs, jobs and tasks.
2. Design of the training programme based on the results of the systematic analysis.
3. Development of the materials for training and assessment.
4. Implementation of training and assessment of the learners.
5. Evaluation and revision of the training based on the performance of trained personnel in the job settings as well as feedback on the training process.

RO - Reactor Operator licence holder.

SPC - Single Point Contact.

SRO - Senior Reactor Operator licence holder.

SS – Shift Supervisor

SS(CR) – Shift Supervisor (Control Room)

SS 9/0 – Shift Supervisor (Unit 9/0)

Unit SRO - The senior reactor operator licence holder assigned to a unit. This person is responsible for the operation of the applicable unit and its auxiliaries and will therefore be in direct control of that unit's operation.

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3. REFERENCES

“Guidebook on Training to establish and maintain the Qualification and Competence of Nuclear Power Plant Personnel” IAEA – TECDOC – 525.

“Nuclear Power Plant Personnel Training and its Evaluation” IAEA Technical Reports Series No. 380.

“Operator Licensing Examination Standards for Power Reactors” NUREG 1021.

“Analysis, Conclusions, and Recommendations concerning Operator Licensing” NUREG / CR 1750.

“Control Room Operator, Senior Control Room Operator and Shift Supervisor Qualifications” INPO 82-008.

“Guidelines for the Conduct of Operations at Nuclear Power Stations” INPO 01-002.

“Guideline relating to the programs for the Preservation of Technical Qualification of Responsible Shift Personnel at Nuclear Power Plants” Gesellschaft für Reaktorsicherheit, Edition 5/80.

“Licence Document on the Requirements for Medical and Psychological Surveillance Control at Koeberg Nuclear Power Station”: LD 1077.

“Licence Document on the Requirements for Initial Operator Licensing at Koeberg Nuclear Power Station”: LD-1092.

“Licence Document on the Requirements for the Full Scope Operator Training Simulator at Koeberg Nuclear Power Station”: LD-1093.

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4. OPERATOR LICENCE HOLDER REQUALIFICATION AND RENEWAL REQUIREMENTS

4.1 NL-1 Requirement

A person must be authorised by a licence issued by the NNR to perform the function of a RO or a SRO.

4.2 Requalification Programme Objectives

The licensee shall establish, implement and maintain a requalification programme in line with the following objectives:

- Ensuring that operator licence holders maintain, and continuously improve, the high level of knowledge, skills and abilities required to perform their duties.
- Ensuring that operator licence holders are kept abreast of all changes to plant and procedures, and of any relevant operating experience.
- Providing a system for assessing and documenting the competency and training of operator licence holders.

The licensee shall establish, implement and maintain the necessary processes and procedures acceptable to the NNR to fulfil the objectives of the requalification programme.

4.3 Requalification Programme

Persons who possess operator licences shall undergo a programme of continuous training approved by the NNR, which has been developed under the SAT process.

The programme shall have a regular format designed to permit all operator licence holders to be trained on the knowledge, skills and abilities needed to perform the duties of licensed operators. The knowledge, skills and abilities will be identified, in part, from learning objectives derived from a systematic analysis of licensed operator duties and from information in the Safety Analysis Report, problem notifications and operating procedures.

The licensee must implement an assessment strategy approved by the NNR, to assess the performance of team and individual skills and competencies, and have the controls in place to perform an evaluation of training effectiveness.

4.4 Licence renewals

Operator licence renewals for all operator licence holders shall be performed every two years on 1st August [i.e. 2005-08-01, 2007-08-01, etc.]. Any operator who obtains an operator licence more than six months prior to a renewal date shall have the next renewal date as his operator licence expiry date. An application for licence renewal shall be presented to the NNR thirty days before the renewal date. The information shall contain a current status from the Operators Health Register as described in LD-1077: Requirements for Medical and Psychological Surveillance and Control.

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4.5 Simulator Requirements

For simulator training hours to be credited to operator licence holders undergoing requalification training, the simulator shall meet the requirements of LD-1093: Requirements for the Full Scope Operator Training Simulator at Koeberg Nuclear Power Station.

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5. ACTIVE INVOLVEMENT FOR OPERATOR LICENCE HOLDERS

To maintain active status, the licensee shall actively perform the functions of a licence position on a minimum of seven 8-hour shifts per calendar quarter and he shall fulfil the requirements as per Section 4, and the duties and responsibilities listed in Section 7.

If an operator licence holder fails to attend the required requalification training, then he shall be considered to have not met the requirements of Section 4.

The operator licence holder shall be responsible for ensuring that the requirements for active involvement are met.

If an operator licence holder has not had any active involvement for a period greater than 45 days, then either section 5.1 or 5.2 shall apply.

The Licensee must maintain records for verification by the NNR that the requirements for active involvement have been met.

For the purpose of Active Involvement, work as an Outage Shift Manager, Outage Senior Shift Supervisor or Outage Shift Supervisor, may be credited as a maximum of two 8-hour active shifts per calendar quarter subject to the following:

- The individuals must maintain logs that contain the major activities and their duration for the relevant outage period.
- Their logs must be available for review by the NNR.
- The Licensee shall have administrative controls that ensure these requirements are met.

5.1 No active involvement for a period of greater than 45 days but less than or equal to 90 days

Before the operator licence holder takes over shift in a specific licence position, the Shift Manager shall ensure that the operator licence holder is aware of, and understands, all procedural changes, incidents, abnormal occurrences, modifications and administrative controls that have been implemented on that unit since the operator licence holder was last active in that position. The Shift Manager shall treat each case individually. However, when the operator licence holder has been absent from the site for the above period, the Shift Manager shall ensure that the operator licence holder has a minimum of four hours in the control room prior to taking over shift, to ensure that the operator licence holder is aware of the above changes.

The Licensee shall have means to ensure that re-familiarisation of personnel interchanging between control rooms meets the requirements of this section prior to responsibility on the new unit being assumed.

5.2 No active involvement for a period of greater than 90 days

Before returning to active licence involvement status, the operator licence holder shall demonstrate to the NNR that he has retained the required knowledge, skills and abilities.

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The NNR shall deal with the requirements for each operator licence holder to resume active licence status on an individual basis.

The Licensee shall inform the NNR of the duties the operator licence holder has been performing since his last active involvement and shall obtain prior NNR approval of the proposed assessment schedule needed to allow re-activation of his licence.

These assessments shall be prepared and performed by the Licensee.

The operator licence holder shall not return to active duties without written permission from the NNR.

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6. REVOCATION OR SUSPENSION OF OPERATOR LICENCES

The NNR may revoke or suspend an operator licence holder's operator licence if, in its opinion, the individual understood, or should have understood his responsibility or knew or should have known the required actions, and nevertheless knowingly, or with careless disregard, failed to perform the required actions which have actual or potential safety significance.

Action shall also be taken in cases of individual integrity, such as reporting to work unfit for duty, or knowingly making false statements to the NNR.

If an operator licence holder fails to comply with Section 4 of this document then his licence shall be suspended.

If an operator licence holder contravenes LD-1077, then his licence may be suspended or revoked.

If the NNR has reasonable doubt that any operator licence holder has not retained the required level of knowledge, skills or abilities, then the NNR will request that the operator licence holder retake a licensing assessment, or any part thereof, within 90 days of the request. During this period the operator licence holder shall be suspended from acting in a licence position. If the operator licence holder fails to appear for the assessment then the operator licence holder's operating licence shall be revoked.

If an operator licence holder, who is not in training, is removed from active duties or is suspended from acting in a licence position by the Licensee, then the Licensee shall inform the NNR within seven days of the proposed requirements for the operator licence holder to satisfy prior to resuming an active position.

The operator licence holder shall only return to active duties with written permission from the NNR.

In the event of an operator licence holder leaving the employ of the Licensee, then for fourteen days prior to his final day in the employment of the Licensee, he shall not occupy a licence position.

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7. DUTIES AND RESPONSIBILITIES OF OPERATOR LICENCE HOLDERS

7.1 General duties and responsibilities of operator licence holders

The operator licence holder shall be deemed to have satisfied the NNR that he is competent to manipulate the controls of Koeberg Nuclear Power Station Units 1 and 2, to supervise the operation of the reactors, and to undertake the duties and responsibilities, in respect of health and safety, if compliance with the following is respected:

1. The operator licence holder shall operate the reactor units and associated unit auxiliaries in accordance with the Licence NL-1.
2. Only an operator licence holder shall manipulate or direct the manipulation of a control that directly affects reactor reactivity or power level. All operating of valves, electrical breakers or switches affecting reactivity, power production or nuclear safety shall be performed or be directed by an operator licence holder.
3. A person not possessing an active operator licence may only make operational recommendations or supply data to the operator licence holder in their areas of expertise. However, it is the operator licence holder who is responsible for supervising or performing operations in accordance with this licence document, applicable procedures or the Licence. Directives to operator licence holders from the Licensee's management shall not be contrary to the requirements of Licence NL-1.
4. A person under training for a RO or SRO shall only be allowed to manipulate controls when under the direct supervision of an operator licence holder during normal operation.
5. Only SRO licence holders have the authority to direct a reactor operator licence holder to perform operations that affect power level, core reactivity or critical safety functions.
6. The Licensee shall ensure that there is a route of redress in the event of a disagreement between operator licence holders over activities affecting nuclear safety.

The final action shall be the responsibility of the Unit SRO.

7. All activities, to which procedures apply, shall be accomplished by the operator licence holder in accordance with such procedures. The choice as to whether procedure steps are memorized, or checked during or after actions, is left to the operator licence holder performing the actions. The actions performed shall be verified against the appropriate procedure.
8. If a situation arises which cannot be accomplished by plant procedures, the operator licence holder shall act on his training and judgement to restore the unit to a safe mode identified by plant procedures and the Operating Technical Specifications. However, actions that can be performed in accordance with procedures during such abnormal conditions shall be accomplished in accordance with those procedures and portions of the Operating Technical Specifications that can be complied with shall still be met.

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9. An operator licence holder shall shut down the unit(s) or any equipment if, in his judgement, conditions so warrant. If automatic protective actions do not occur after reactor safety setpoints have been exceeded, then the operator licence holder shall perform actions to mitigate the event by the fastest and safest available means consistent with the situation.
10. Prior to taking over shift, each operator licence holder shall be responsible for being aware of the status and operability of all the unit's systems, and of scheduled maintenance or testing that will affect system operability on his shift and shall check and verify the status of on-going maintenance or testing, from the previous shift.
11. The operator licence holder shall ensure plant conditions are appropriate for surveillance testing requirements. The operator licence holder shall control maintenance items or testing which affect the operating mode of the unit. The operator licence holder shall understand the nature of all maintenance and testing, effects on system indications, and changes to plant equipment status. If scheduled maintenance items or testing are not proceeding as expected, then the operator licence holder shall investigate and, if necessary shall stop the maintenance or testing to have any problems corrected.
12. If special plant conditions are required to be established for maintenance or testing, then the operator licence holder shall ensure that the conditions required are safe and necessary for the task. Work shall not commence, or continue, until the operator licence holder is satisfied with plant conditions.
13. Operator licence holders shall ensure that access to the emergency shut down panel and work on the emergency shut down panel shall only be undertaken in the presence of an operator licence holder.
14. The operator licence holder who is designated for critical safety monitoring shall, in the event of a reactor trip, safeguard actuation or, on the instruction of the unit SRO, immediately report to the unit control room.
15. All operator licence holders shall ensure that the requirements of Attachment A, Control Room Manning are complied with.
16. An operator licence holder shall authorise all radioactive effluent discharges immediately prior to release.

7.2 Additional responsibilities and authorities assigned to reactor operator licence holders

A RO licence holder in an active position shall:

1. Be responsible, primarily from the control room area, for the operation of a reactor unit and associated auxiliaries.
2. Continuously monitor all parameters displayed in the control room.
3. Manipulate the controls for controlling, operating and/or testing equipment during normal operations.

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4. Take necessary action to control the unit's equipment and mitigate the effects of transient, abnormal and incident conditions.
5. Direct the activities of non-licensed operators and instruct them to perform tasks.
6. Increase/Decrease electrical output of the unit within the Licence conditions.
7. Be able to operate the public address system and all other communication equipment from the control room.
8. Monitor refuelling activities from the control room.
9. Be responsible for the safe shutdown of the unit from positions outside the control room in the event that the control room must be evacuated.

7.3 Additional responsibilities and authorities assigned to senior reactor operator licence holders

The unit SRO is responsible for the safe operation of the applicable unit and its auxiliaries and is therefore in direct control of that unit's operation. The unit SRO shall be responsible for the safe and reliable operation of the unit under all conditions and for compliance with all operating requirements of the Licence, this licence document, Operating Technical Specifications and the requirements of the NNR.

The primary responsibility of the unit SRO shall be to direct and co-ordinate the activities of all persons who are present in the operational areas of his unit and to supervise the activities of the control room staff. Control room manning shall be as specified in Attachment A.

1. The unit SRO shall have the authority to act as necessary to:
 - Protect the welfare and health of employees and the general public.
 - Protect the plant from damage.
2. The unit SRO shall have the authority to manage, direct, and co-ordinate the activities of all persons who are present in the operational areas of his unit.
3. During emergencies the unit SRO shall assume control over all unit activities and direct appropriate and timely action to ensure the safety of the unit's equipment and to maintain safe operating conditions.
4. In the event of a reactor trip or an unexplained power variation, the unit SRO shall analyse the cause in order to decide on the appropriate action to take. The unit SRO shall allow a reactor start-up only if the causes of the trip have been satisfactorily investigated, resolved and thoroughly understood by him and that, in his opinion, there is no on-going safety concern.
5. The unit SRO shall be responsible for controlling scheduled safety-related maintenance and core loading activities during outages and refuelling operations. (The core loading supervisor shall be responsible to the Unit SRO for ensuring that all alterations carried out under his direction do not compromise overall nuclear safety.)

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6. An active SRO licence holder shall approve the implementation of all maintenance work immediately prior to actual work commencing.

Note:

If the SRO licence holder is not the unit SRO:

- The active SRO licence holder will be under the direct control of the unit SRO.
 - The unit SRO shall give permission for all work on safety-related equipment and systems that affect plant operation.
7. The unit SRO shall record parameters and a written narrative of events so that in the future it will be possible to reconstruct the occurrences and unit conditions of that shift.
8. The unit SRO shall, as required, provide technical leadership, ensure that interpersonal communication is effective and ensure that the operator licence holders respond to plant conditions of the unit as appropriate.
9. The unit SRO shall take protective actions when he deems it necessary to limit radioactive releases and to minimise other consequences of an incident.
10. On taking over shift, each SRO shall ensure that he is familiar with the state of both units so that he is able to respond to emergencies arising on either unit.
11. On each shift a SRO, normally the Shift Manager, shall:
- Ensure that the minimum required on-shift staffing levels are in accordance with Attachment B.
 - Ensure the availability of emergency, first aid and fire fighting teams during his shift.
 - Perform the actions specified in the Emergency Plan in the event of a nuclear emergency, until relieved by the appropriate administrator of those actions.
 - Initiate initial reporting of occurrences as specified in LD-1000 and in accordance with the requirements specified in LD-1008.

The Power Station Manager shall be responsible for overall unit operation and shall delegate this responsibility during his absence. During out-of-office hours the Shift Manager deputises for the Power Station Manager.

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8. RECORDS

All records generated as a result of the licence document shall be retained until two operator licence renewals have been performed.

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ATTACHMENT A CONTROL ROOM MANNING

Two licensed operators shall be present at the controls in the control room of each reactor at all times when there is a fuel assembly in the reactor building. As long as there are fuel assemblies in the fuel building then there shall be at least one licensed reactor operator in the control room.

One of the following two conditions shall be adhered to at all times:

1. At least two SRO's shall be on the 20m level, within the confines of the Security boundaries, (i.e. they shall not pass through security doors 9LA/19/20, 9LA/19/21 and 9LA/19/47).
2. One SRO shall remain within the confines of the two control rooms.

Prior to a SRO leaving the 20m level the other SRO (s) shall be informed. The SRO remaining in the control rooms shall not leave the control rooms until either another SRO returns to the 20m level, (within the confines of the Security boundaries), or he is relieved.

If one SRO is confined to the control rooms then, the minimum shift composition shall be two RO licence holders in each of the control rooms and one SRO licence holder between the two control rooms.

Preferably, the unit SRO should be in the control room at all times.

Note:

A SRO shall be in the Control Room when planned sensitive operations are taking place.

If one of the operator licence holders who is part of the minimum composition wishes to leave the control room, then the operator licence holder leaving the control room shall be replaced by an equivalent, or higher, level of operator licence holder. The incoming operator licence holder shall ensure that prior to taking over shift that he fulfils the requirements of Section 5.

If the unit SRO wishes to leave the control room then the following also applies:

1. The unit SRO may not go into areas where he cannot be contacted by the control room. If the PA system is affected by noise from the plant then an alternative means of contacting shall be used, e.g. pager.
2. If a nuclear emergency is declared whilst the unit SRO is absent from the control room, he shall immediately return to the unit control room.

If during an incident no one is available to operate equipment outside the control room, then the most junior operator licence holder shall be used rather than the unit SRO.

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**ATTACHMENT B
MINIMUM SHIFT COMPOSITION**

	PERSON IN CHARGE	OPERATOR (PER UNIT)	
		MODE 3a – 6b	MODE 1 – 2b
Senior Reactor Operator Licence Holder	1	1	1
Reactor Operator Licence Holder		2	2
Non-Licensed Operator		2	1
Radiation Protection Assistant (Total)		1	1
Radiation Protection Monitors (Total)		1	1
Fire Team Members (Total)		6	6

NOTES:

1. An operator licence holder, who is not fulfilling any of the positions above, shall be available to perform the Critical Safety Function Monitoring.
2. Shift composition may be less than the minimum requirements for a period of time not exceeding two hours in order to accommodate unavoidable absence of on duty shift members, provided immediate action is taken to restore the shift composition to within the minimum requirements. This provision shall not permit any position to be unmanned on shift change due to an oncoming shift member being late or absent.
3. Attachment A for Control Room Manning is applicable at all times.
4. On each shift there shall be at least two SRO licence holders who are able to act in the position of Shift Emergency Controller.