



To: THE NATIONAL NUCLEAR REGULATOR
Manager Communications and Stakeholder Relations National Nuclear Regulator
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Per email: enquiry@nnr.co.za

20.10.2026

Attention: NNR Leadership / Gino Moonsamy

REQUEST FOR UPDATE ON MAINTENANCE OF KOEBERG NUCLEAR POWER STATION (KNPS)
(Reference: K10001925N – _NNR Directive: Regulatory Oversight of Long-Term Operation Conditions.)

Dear Sir,

The National Nuclear Regulator has authorised the long-term operation of Unit 1 and Unit 2 of the Koeberg Nuclear Power Station (KNPS) during 2024 and 2025 respectively, despite serious concerns having been raised by civil society, including SAFCEI, about the safety of the plant during the authorisation process, and thereafter during the appeal process against the authorisations. The Minister has not yet decided the appeals.

We refer to our letter to you of 2 December 2025 and your response, and to announcements in the PSIF meetings of March, June and September 2026 which respond to some of the safety concerns we have raised to date. These communications show that critical maintenance on the KNPS to ensure safety continues to be delayed without good reason. The public has a constitutional right to an environment which is not detrimental to health and well-being and the NNR is the only body which is capable of regulating the KNPS. It is under a constitutional and regulatory duty to protect the public, property and the environment against nuclear damage through the establishment of safety standards and regulatory practices. (National Nuclear Regulator Act (47 of 1999) section 5(a)). However as set out in our correspondence and in the paragraphs below, the NNR continues to fail to require ESKOM to stick to deadlines and complete the required maintenance in several key safety respects.

This failure by the NNR to ensure safety at the KNPS leaves SAFCEI with no option but to demand that the KNPS is shut down until all of the repairs have been completed.

1. Beyond design-based risk assessment.

SAFCEI demands that a beyond design-based risk assessment be done on the KNPS as none has been done to date and the plant, plus its geographic and social context has

changed significantly since it was first commissioned, creating an increased public safety risk should there be a major accident.

When ESKOM presented its safety case for the long-term operation (LTO) to the NNR, it did so based on the modelling of the consequences to the containment structure of accidents that were within KNPS's original design parameters. These were formulated in the 1970's. The NNR was not presented with an assessment of what will happen to KNPS if an accident occurs that exceeds those parameters, and therefore could not know what additional safety measures must be installed.

For KNPS the need for such an assessment is amplified by the fact that the plant, as well as its geographic context have significantly changed since it was initially commissioned in 1984. More than 160,000 people now live within the 16 km urgent protective zone around the KNPS, a massive increase from the sparsely populated farming and coastal settlement area when site planning and construction began in the 1970s.¹

The KNPS is currently operating beyond the period for which it was originally designed to function safely. The plant now has significant maintenance issues, and repairs are continually subject to delays, in some respects, such as the ICCP, for over a decade.

In light of the above facts SAFCEI requests the NNR to explain why modelling of the KNPS containment structure by ESKOM for a beyond design-basis accident should not be done, in order to compare the results with the LTO's safety case. Thereafter any further safety measures and/or upgrades that are required can be undertaken. It is submitted that the KNPS should only be allowed to operate after this process has been completed.

2. Emergency plan

It is a condition of KNPS's LTO license that ESKOM and the City of Cape Town revise its emergency by December 2025.

While SAFCEI has been told informally that the emergency plan has been revised, there is no proof of such. The NNR does not have a pdf of the plan and the two files that ESKOM does have on its website date from 2005 and 2022. While the City of Cape Town does have a website outlining the evacuation zones for KNPS that was last updated in July 2026, this is not a comprehensive plan. A new emergency plan should be in place. The NNR must approve that plan and the plan has to be tested in a mock exercise. There must be accessible public dissemination of the plan. If these conditions are not met, then KNPS should not be in operation.

The NNR is requested to respond to the following questions:

1. Has a revised emergency plan been completed and with the City of Cape Town?
2. If so, was it completed in December 2025?
3. Has the emergency plan been approved by the NNR?
4. If implementation of the plan is not successful in all respects, will the NNR shut down KNPS? When would the next test be?
5. Is the emergency plan accessible to the public? If so, where and how?
6. As not everyone in South Africa is proficient in English has the plan been translated into every official language including sign language?

¹ <https://odp-cctegis.opendata.arcgis.com/datasets/koeberg-restriction-areas/explore?location=-33.922500%2C18.532500%2C9>

LESSONS FROM FUKUSHIMA

3. Hardened Water Supply

The hardened water supply is critical to the safety of the KNPS. SAFCEI demands that it be installed and operational to ensure that the spent fuel pond has a sufficient supply of water in the case of an accident. To date the KNPS modification to install the hardened water system's external connections has not been completed despite the deadline for this modification (identification number 12008) being October 2025. The NNR has made a formal ruling that ESKOM was out of compliance by the end of October 2025. However, on 6th of November 2025, it granted KNPS an LTO operational license. It appears from the report to the September 2026 PSIF meeting that the hardened water supply external connections modification (12008) has still not been completed.

Safety consequence

The necessity of a hardened water supply is a major lesson from the Fukushima disaster. The spent fuel pond requires a supply of cooling water. If the spent fuel pond does not have water for long enough, it will catch fire and release a substantial amount of radioactive particles. ESKOM stated in a 2015 post-Fukushima report that a hardened water supply was an absolute necessity. As a consequence, for over a decade, KNPS has been operating under conditions of unnecessary and potentially catastrophic risk. This risk would have been significantly minimised if Eskom had implemented this modification as per both its own timelines and those of the NNR.

The NNR is requested to advise whether the hardened water supply connections (modification 12008) have been completed i.e. have been installed and operational, and if not what justification exists for the plant to continue to be operational? If completed, the NNR must advise of the date when the modification was completed. If not, when will the modification be completed?

If the modification remains incomplete the NNR will have failed to comply with its constitutional and regulatory duty to protect the public, property and the environment against nuclear damage by failing to enforce the requirement of the hardened water supply within a reasonable time post-Fukushima. In these circumstances the only way for the NNR to fulfil this mandate to protect the public and environment would be to shut down the KNPS until the modification (external connection points) is installed and tested.

4. Hydrogen Gas

SAFCEI demands that NNR must require ESKOM to install equipment to monitor hydrogen gas concentrations in the containment structures of the KNPS.

The KNPS currently has no method of measuring hydrogen gas concentrations in the containment building and relies on a proxy instead of installing the appropriate measuring devices. ESKOM has no known plans to install the correct equipment to monitor levels of hydrogen.

A severe accident in a water-cooled nuclear power plant may lead to the production and release of hydrogen. If hydrogen forms flammable gas with air and steam in the containment, it may trigger more serious hydrogen explosion accident, threaten the

integrity of the equipment and the containment.² This is what happened at Fukushima. For this reason, ESKOM should install the appropriate measuring devices.

The NNR is requested to advise regarding the following issues:

1. Will the appropriate measuring devices for hydrogen gas concentrations be installed, and if so, when will this take place?
3. If not, what is the justification for using proxy or indirect methods as opposed to the best available technology, given the inherently hazardous nature of nuclear power stations and the proven danger of a hydrogen explosion?
4. Considering the dangers of a hydrogen related explosion, would it not be safer to have two systems to monitor the gas concentration so that if one fails, ESKOM has the other as a backup.

5. Restoration of the Control Room Envelope

SAFCEI is concerned that the state of the control room envelope at the KNPS could pose an unacceptable risk to public safety.

SAFCEI demands that the control room envelope should be restored as a matter of extreme urgency, if it has not already been completed.

Safety concerns

The KNPS control room envelope is the physical structures (doors, ceiling, floors, etc) that surround the main control room, which is the nerve centre of a nuclear power station. In the case of an accident, the control room is of critical importance. If it does not function optimally the consequences of the accident could be exacerbated. The control room envelope needs to be protected against chemical and radioactive gases, in order for staff to operate in the room. Sealing the control room's envelope against these gases is therefore of vital importance. At the moment, the envelope needs to be brought up to standard as a matter of urgency, given the safety risks of it not being fully and optimally functional. ESKOM states that repairs will be completed by January 2027. The modification is referred to as "Restore the Control Room Envelope to within design basis limits".

The NNR is required to advise whether the modification to the control room envelope been completed. If not, will it be completed by ESKOM's January 2027 deadline? If it has not been restored by this time will the NNR shut down the KNPS?

6. Install the venting system modification

SAFCEI is concerned that the absence of a filtered containment venting system at the KNPS poses an unacceptable risk to public safety.

SAFCEI demands that a filtered containment venting system be installed at the KNPS as a matter of extreme urgency.

A filtered containment venting system allows plant operators to release gases from inside the containment structure and to be able to reduce the amount of radionuclides released. It

² Research progress of hydrogen behaviors in nuclear power plant containment under severe accident conditions
Author links open overlay panelFeng Liu ^{a b}, Zhongning Sun ^{a b}, Ming Ding ^{a b}, Haozhi Bian ^a :
<https://www.sciencedirect.com/science/article/abs/pii/S0360319921033966>

is the post-Fukushima severe accident feature designed to deliberately vent and filter containment gas under extreme overpressure—but is not formally listed as part of the original design or standard upgrades at the KNPS Nuclear Power Station, so at the moment, ESKOM does not appear to have this system in place. The name for this modification is “Filtered Containment Venting (EERI 12042).” No date or deadline for installation can be found.

Safety concerns

In the case of a meltdown, gases will be produced. This increases the air pressure inside the containment structure. If the pressure gets too high, the containment structure will fail and radionuclides will be released into the environment. In order to prevent the containment structure from failing, the operators of the plant will vent some of the radioactive and other gases to reduce the pressure inside the containment structure. This means that some of the radioactive gases will go into the environment, but to a far lesser extent than if the containment structure were to fail.

The need for a filtered containment venting system has been known since the Windscale nuclear disaster of 1957 and was reinforced by the Three-Mile Island partial meltdown in 1979. The Fukushima plant did not have a filtered containment venting system installed. The impacts of the Fukushima disaster could have been less with such system in place.

SAFCEI requests the NNR to advise whether the filtered containment venting system been installed and if not, when will it be installed? If it has not been installed what is the deadline for its installation and if there is no such deadline what is the justification therefor?

SAFCEI is concerned that the absence of a filtered containment venting system at the KNPS poses an unacceptable risk to public safety and demands that a filtered containment venting system should be installed at the KNPS as a matter of extreme urgency, if it has not been installed already.

9. Seismic Tests

SAFCEI demands that the NNR ensures that ESKOM completes and assesses all seismic and aseismic tests and studies at KNPS. According to NNR Directive: *Outcome of Assessment for Long Term Operation dated 19 July 2024, NNR reference k10001925N*, there are a series of assessments required in terms of seismic safety.³ They are:

c) Seismic Assessment

i) Validate the seismic assessment of the plant in the 15 - 45 Hz frequency domain of the updated seismic response spectrum (USRS) by developing and submitting for regulatory approval the updated floor response spectra (UFRS).
(Due: December 2025)

ii) Develop a seismic probabilistic safety assessment (Seismic PSA) to demonstrate fulfilment of the seismic safety goals specified in PP-014.
(Due: December 2025)

d) Aseismic bearings

i) Use representative samples (or in the case of a lack of representative samples,

³ <https://nnr.co.za/wp-content/uploads/2024/07/k10001925N-NIL-01-Condition-16.4-LTO-directive.pdf>

manufacture new samples) for aseismic bearings and perform accelerated ageing tests to ensure that their condition is representative of the in-situ bearings.

Evaluate the impact of these test results on the shear modulus and the potential impact on global plant safety and also evaluate the safety margins of the material properties.

(Due: December 2025)

ii) Evaluate and justify that there are adequate remaining safety margins to cover the seismic demand resulting from requirements coming from post-Fukushima re-assessment.

(Due: December 2025)

iii) Re-assess the surveillance procedures including surveillance frequencies, calculation methods, and acceptance criteria.

(Due: December 2025)

Safety consequence

The combination of the above will provide a realistic picture of what will happen to KNPS in the event of an earthquake and are therefore a key determinant in deciding on the safety of KNPS. If an earthquake strikes and KNPS cannot withstand it, the likely outcome would be that the plant would be rendered inoperable. The risk of a serious accident cannot be discounted.

Since all tests and assessments should be completed and analysed the NNR is required to advise:

1. Has the seismic probabilistic safety assessment been done?
2. If so, when was it done and what was the result?
3. If not, when will it be done?
4. Have the aseismic bearings been tested?
5. If so, when and what was the result?
6. If not, when will the aseismic bearings be tested and the results analysed?
7. Has the re-evaluation of KNPS's earthquake related safety margins been done?
8. If so, when and what was the result?
9. If not, when will the re-evaluation of KNPS's earthquake related safety margins be done?
10. If one or more of the seismic tests and/or assessments has not been completed, why is KNPS being allowed to operate?

10. Monitoring system

Data collected over many years is required in order for accurate predictions to be made about status of the containment structure in the future. Currently ESKOM does not have a fully functioning monitoring system and has no data for Unit 2 and has interrupted data for Unit 1. A fully functional containment monitoring system needs to be in place as a matter of urgency. Waiting until the planned installation in 2028 or 2029 is not acceptable.

The failure of the containment monitoring system over two decades shows that ESKOM is not a responsible nuclear operator. Furthermore, it proves that the NNR has not used its powers to reverse the collapse. Simply put, ESKOM has allowed a critical safety feature to decay to the point of uselessness and the NNR has not exercised its powers to cause this situation to be properly rectified.

SAFCEI demands that the feasibility study of the containment monitoring system upgrade be undertaken and then the containment monitoring system be upgraded as per the planned modification.

The NNR is requested to advise

1. Has a pre-feasibility study been done on bringing the containment monitoring system to full functionality?
2. If so, please provide the pre-feasibility study.
3. If not, why not? When will the pre-feasibility study be completed?
4. Has a feasibility study been done on bringing the containment monitoring system to full functionality?
5. If so, please provide the feasibility study.
6. If not, why not? When will the feasibility study be completed?
7. When will the containment monitoring system be brought to full functionality? Please indicate the exact month and year.
8. Has the NNR set a deadline for restoring full functionality? If so, what is the deadline?
9. Has ESKOM put the restoration of the monitoring system out to tender?
10. Has ESKOM approved one or more contractors to restore functionality?

11. Integrated Leak Rate Test (ILRT)

An integrated leak rate test (ILRT) is a safety test used to determine the leakage rate of an entire containment structure, typically in a nuclear power plant. Air pressure inside of the containment structure is increased to determine whether the structure leaks, whereafter leaks can be repaired. These are periodic tests and in the case of KNPS, are done every ten years. An associated stress test, done at the same time as an ILRT, gives some information about the state of the containment structure's concrete and steel.

ESKOM documentation states the purpose of an ILRT,⁴ which is to demonstrate the intended safety function of the containment building:

ESKOM performs Integrated Leak Rate Tests (ILRT) on the containment structures every 10 years (the previous was performed in 2015). During the ILRT, the internal pressure on the containment structures is increased to 400 kPa to mimic [loss of coolant accident] LOCA conditions.

The primary objective of the ILRT is intended to identify leakage from containment (verification that the leak-tight liner and apertures remain within acceptable leakage rates, based on code requirements). Secondly, it intends to place the containment in a design basis pressurised condition to verify the concrete support structure' behaviour.

In 2025, ESKOM conducted a ILRT on Unit 1. It is currently undertaking an ILRT on Unit 2 during the current outage that lasts until the end of November 2026.

SAFCEI seeks confirmation from the NNR that it will be informed when the ILRT is completed and provided with the results of the test and recommendations together with timeframes for repairs.

12. Impressed Current Cathodic Protection (ICCP)

⁴ Containment Re-Analysis for Long-Term Operation, Pg. 89

The metal within the containment structure has been experiencing corrosion for decades. This corrosion weakens the structure and is spreading. There is a known repair, impressed current cathodic protection (ICCP), which halts the corrosion.

Safety consequence

In 2015, ESKOM convened an expert panel on the subject of corrosion in the containment structure. ESKOM's own experts recommended that ICCP be undertaken as a matter of matter of urgency, citing the risk that in time, the corrosion would spread and weaken the containment structure to the degree that it would likely not hold in the case of a meltdown. Hence this is a very serious safety matter, but notwithstanding these warnings ICCP continues to be delayed at KNPS. In 2022, the NNR promised that ICCP would be completed in 2024. However, despite ESKOM describing ICCP as an urgent matter it remains delayed. As far as is known, the NNR has yet to approve the design of the ICCP system

The latest set of delays is that ESKOM says ICCP can only be done after an ILRT. The ILRT for Unit 1 is complete and the ILRT for Unit 2 should be complete by the end of November 2026.

SAFCEI demands that ICCP be installed and tested for hydrogen embrittlement. ICCP should be immediately instituted at KNPS. ICCP cannot be delayed any further and the plant should be shut down until ICCP is installed.

The NNR is requested to advise:

1. Has the design of the ICCP for KNPS been approved by the NNR and if so when?
2. If not, why? When will the NNR approve it?
3. Has ESKOM contracted a contractor? If so, who is the contractor?
4. If a contractor has not been chosen, when will one be chosen?
5. When will ICCP be implemented on both units?
6. Given that Unit 2's ILRT will have been completed at the end of Nov 2026 and Unit 1 has already had an ILRT, why isn't ICCP being installed now? There can be no justification for further delay of a repair that has been urgent since 2015.

The failure to maintain the monitoring system and the continued delays in installing ICCP represent massive operator and regulatory failure. KNPS should not be running at the moment.

Together with the matter of ICCP is the issue of effecting repairs to the containment structure's concrete, which is experiencing cracking and delamination. In this regard, SAFCEI requests a schedule of repairs with deadlines.

Yours faithfully



F de Gasparis.
Executive Director
SAFCEI