

Regulation of Nuclear Power Plants during Covid-19 Pandemic in South Africa



*For the protection of persons, property
and the environment against nuclear damage.*

National Nuclear Regulator: South Africa

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Table of contents

- 1.0 Introduction
- 2.0 Regulatory response during lockdown conditions
- 3.0 Regulatory Challenges
- 4.0 Regulatory Experience Feedback
- 5.0 Safety measures at the NPP
- 6.0 Nuclear Security amidst the Pandemic
- 7.0 Advances due the Pandemic conditions
- 8.0 Concluding Remarks



Introduction

- 15 March 2020 the South African government declared a national state of disaster in terms of the Disaster Management Act, 2002 (Act No. 57 of 2002).
- This was followed by a nationwide lockdown as of midnight on 26 March 2020. As an essential service, the National Nuclear Regulator (NNR) could continue operations and staff were allowed to work from home during the lockdown period.
- However, some activities, such as some site inspections, were suspended during the lockdown.



Introduction

- The lockdown was subsequently extended to the end of April 2020.
- From the 1st of May 2020 a new approach was initiated that included the easing of lockdown restrictions based on a risk adjusted strategy to allow the start of some economic activity.
- The new strategy consists an “alert system” with five levels, this would allow for flexibility and responsiveness, and would reduce the need to amend regulations in future. As of the 1st of May 2020 the country was at level 4. Levels were subsequently lowered and the country is at Level 2 currently.



Regulatory Activities during Lockdown Conditions

The NNR activated its Business Continuity plan to ensure that core functions can be carried out remotely. Core regulatory functions were performed as follows:

<u>Core Functions</u>	<u>Activities</u>
NPP Inspections	<ul style="list-style-type: none">• Key inspections were performed.• Remote inspections also carried out.
Review and Assessment	<ul style="list-style-type: none">• Analyst worked remotely and meetings with licensee continued using electronic platforms.
Issuance of Licences	<ul style="list-style-type: none">• Licence is developed and issued to licensee by electronic means.
Meetings with Licensee	<ul style="list-style-type: none">• Meetings continued to be conducted by electronic means.



Regulatory Response

- Continued engagement with Operators/Applications via electronic media.
- All incoming and processing of urgent licensing requests and associated reviews continues as per normal;
- Although access to the NPP site under new conditions are possible, planned site inspection activities are rescheduled where possible.
- Monitoring of plant and operations performance continued by online access of live plant information, databases and logs.



Regulatory Actions

- Directed NPP to evaluate the impact of the national lockdown restrictions on the effective implementation of the NPP emergency plan and to:
 - Develop contingency plans as appropriate
 - demonstrate efficacy of the emergency plan
 - Communicate with the public in terms of responsiveness
- Directed NPP to perform control room habitability studies and analyse the possible infection scenarios to ensure the operability of the main and emergency control rooms.



Regulatory Challenges-EP

- When lockdown restrictions were issued the general population were only permitted to make essential visits to public areas. Most of the population were confined to their residences.
- A key challenge arose regarding the need to shelter in homes as opposed to the need to evacuate in the case of an nuclear accident.
- An NGO group wrote to the Minister of Health to object to the regulation that confined members of the public to their residence.
- NNR had to intervene and assure their Executive authority that the likelihood of a evacuation scenario was low, and certain emergency situations would in contrast favour being confined to ones residence.



Regulatory Challenges-LTO

- Regulatory Challenges in regard to LTO stem from the Project Management aspects being carried out by the Utility.
- In this regard Major Modifications such as the Replacement of Steam Generators, re-installation of the Reactor Pressure Vessel Head, use of Dry Storage of used Fuel, and refurbishment of Safety Injection Tanks, are all taking place concurrently. This has placed a burden on the regulator.
- The NNR is now processing safety reviews, commissioning plans, design and manufacturing submissions concurrently. This work is undertaken as part of Long Term operation for the NPP.



Regulatory Experience Feedback

- The NNR requested information sharing from some Bi-Lateral partners during its nationwide lockdown in order to benefit from measures that were being put in place by other regulatory bodies.
- Continuity of key inspections were maintained while ensuring hygiene measures.
- With the relaxations of levels within South Africa then NNR adopted as phased-approach in returning staff to its offices.
- Health and Hygiene protocols were put in place to control the transmission of covid-19 virus.



Safety Measures at NPP

- The NPP strategy and plan is to have the ability to operate both units with a reduced workforce.
- A central Response Command Centre was convened and a Tactical Command Center have been activated at the NPP, together with a NPP steering committee.
- The strategy allows preparation for dealing with the virus to be managed in phases; with a trigger point for each phase which would allow activities in each phase to be executed.



Safety Measures at NPP

- Risk Assessment had been completed and a phased approach to mitigation plans implemented.
- A 14-day quarantine period had been introduced for employees that travelled internationally and returned from high risk countries, this included employees which had been in contact with other people from high risk areas.
- International contractors need to be in self-quarantine for 14 days inside South Africa, get tested and if negative, will be allowed back on site after receiving clearance.
- Supply of PPE to staff in critical positions. (Gloves, Masks, Aprons, special safety glasses, face shields etc.)
- All access to control rooms have been suspended, except for operators, safety engineers and specific maintenance personnel who support the control rooms.



Safety Measures at NPP

Operational Function	Measure
Control Room Operation	<ul style="list-style-type: none">• Overall restriction of plant personnel to control room.• Change in Shift structure to allow quarantined team to relieve
Emergency Responses	<ul style="list-style-type: none">• If insufficient emergency responders, NPP will declare an unusual event.• Electronic communication for stand-by staff in the event of an emergency.• Maintain staff levels for emergency responders



Nuclear Security Amidst Pandemic Conditions

- Increased the relationship of nuclear security objectives under pandemic conditions to acts of sabotage, theft, and vandalism.
- Role clarity involving Nuclear Security requirements and those of Compliance Officials for Pandemic Protocols.
- Security threats to be mitigated while preventing the spread of the Covid-19 virus.
- Ensure adequate staffing levels if infected personnel are quarantined.
- Maintain performance criteria for prevention, detection, and response during pandemic conditions.



Technology Advances to be considered

Society has had to cope with significant disruption brought upon by containing the spread of the covid-19 virus. In support of business continuity advanced technology and communication technology has been actualized even further. Examples of increased utilization have taken place with:

- Increase use of Online platforms
- The digitalization of processes between organizations
- Remote-enabled monitoring
- Artificial intelligence applications
- Automation and robotics to minimize the human interface

The “new normal” may entail further horizontal integration of these tools in support of regulatory processes and activities.



Conclusion

- Regulatory diligence must be maintained to ensure a high level of safety at facilities by ensuring business continuity of the regulatory body.
- Core Functions of the regulatory body can be carried out with the support of computer based platforms.
- Regulatory Effectiveness in the light of constraints imposed by pandemic conditions must be revisited to ensure challenges encountered by lockdown conditions are addressed.
- Innovation is a key element for a regulatory body when pandemic restrictions are in place. The use of electronic media and communication platforms are used in providing continued oversight.



Thank-you for your consideration

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