

Koeberg Nuclear Power Station

Public Safety Information Forum (PSIF)

T van Schalkwyk

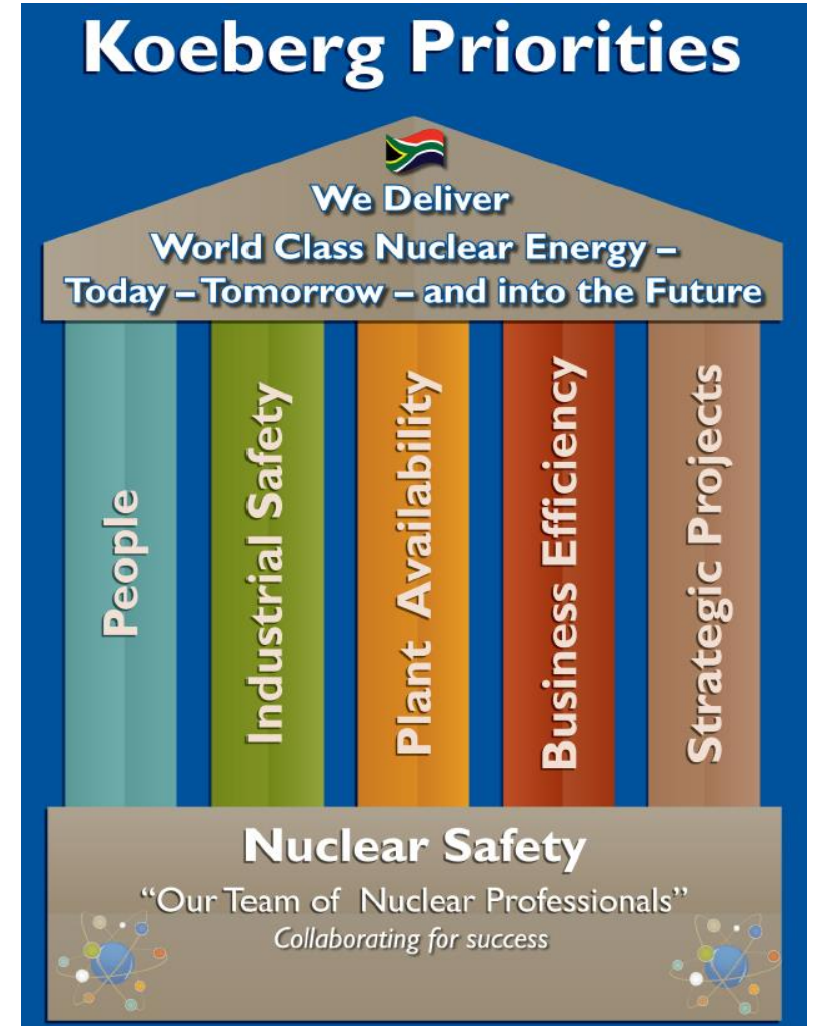
30 November 2023



The purpose of this presentation is to provide feedback to PSIF on Koeberg Performance

To provide feedback on:

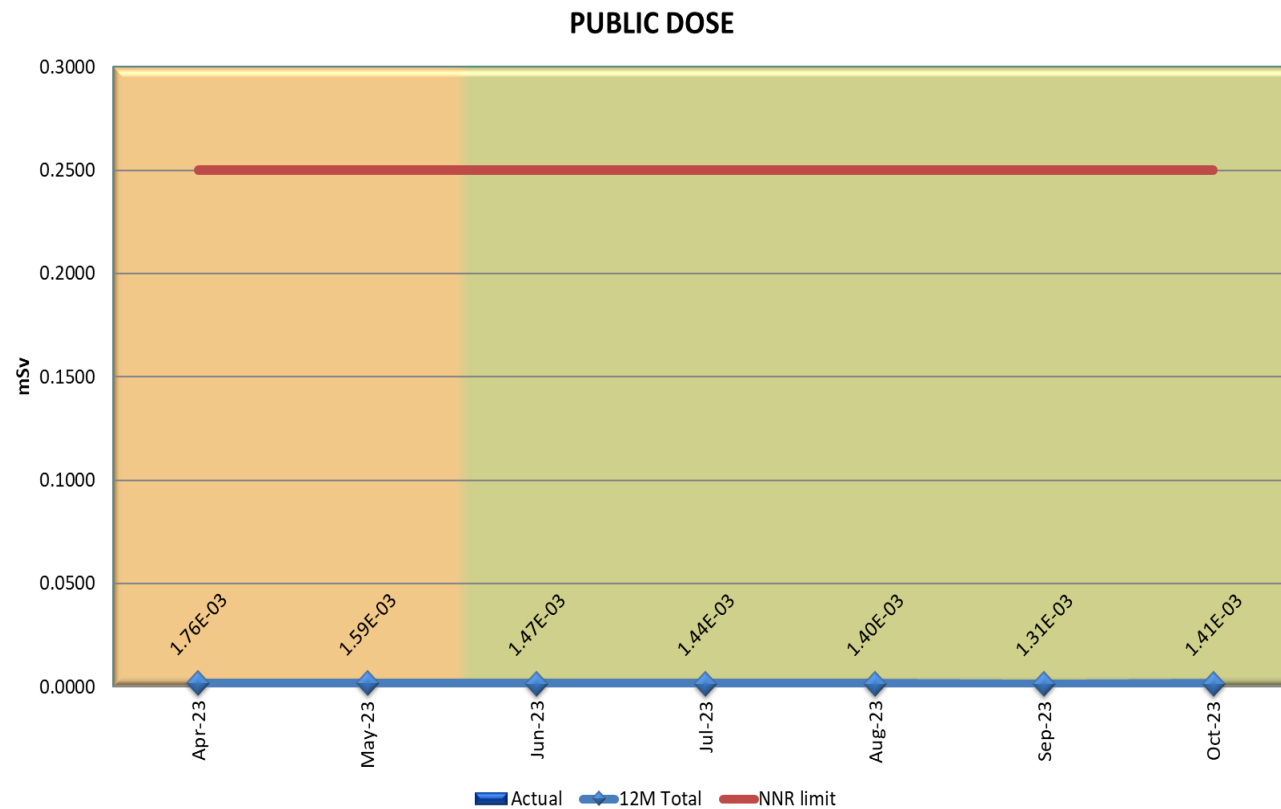
- Radiological Safety
- Noteworthy Events
- Long Term Operation (LTO) - *Spent Fuel assemblies discharged / stored*
- Climate Change
- Concluding Remarks



Radiological Safety



Results



Salient Points

Analysis of current performance:

- Less than 1% of NNR public dose constraint of 0.25 mSv.
- Stable performance well below legal limit.
- Radioactive discharges less than 10% of limits
- No uncontrolled or unplanned radioactive discharges

Plant Status Update



Unit 1

- **Status:** Online for 12 days
- **Energy Output:** 76% Pn; **Generated:** 734 Mwe; **Sent Out:** 693 MWe

Unit 2

- **Status:** Online for 228 days
- **Energy Output:** 86.16% Pn; **Generated:** 836 MWe; **Sent Out:** 796 MWe

Safety System Performance (SSP)

- **Safety System availability:**
 - October 2023: The 12-monthly average unavailability of the Safety Systems is within industry norms.

Chemistry Performance

- **Chemistry Performance Index: Target < 1.01 (October 2023)**
 - Unit 1: The annual CPI for unit 1 has been 1.00
 - Unit 2: The annual CPI for Unit 2 at 1.02
 - The combined annual CPI for the units is 1.01



Noteworthy Events



Event Description	Causes	Actions taken
High ingress of jellyfish (both Units 1 and 2)	Jellyfish present inside the: <ul style="list-style-type: none">• intake basin• circulating water filtration system and trash baskets (CFI)• essential service water system (SEC) rake and drum screens	<ul style="list-style-type: none">• Incident procedure, KWB-I-MARINE, was entered.• The Emergency Control Centre (ECC) was activated.• The ingress with jelly fish was addressed and the following was achieved:<ul style="list-style-type: none">➢ The jelly fish inside and outside the intake basin were reduced to a manageable number➢ The trash baskets were emptied➢ The maserator pump was in place➢ The circulating water system and the essential service water system drum screens were back in slow speed and coping with the influx



Jelly fish



Drum screens



Intake basin

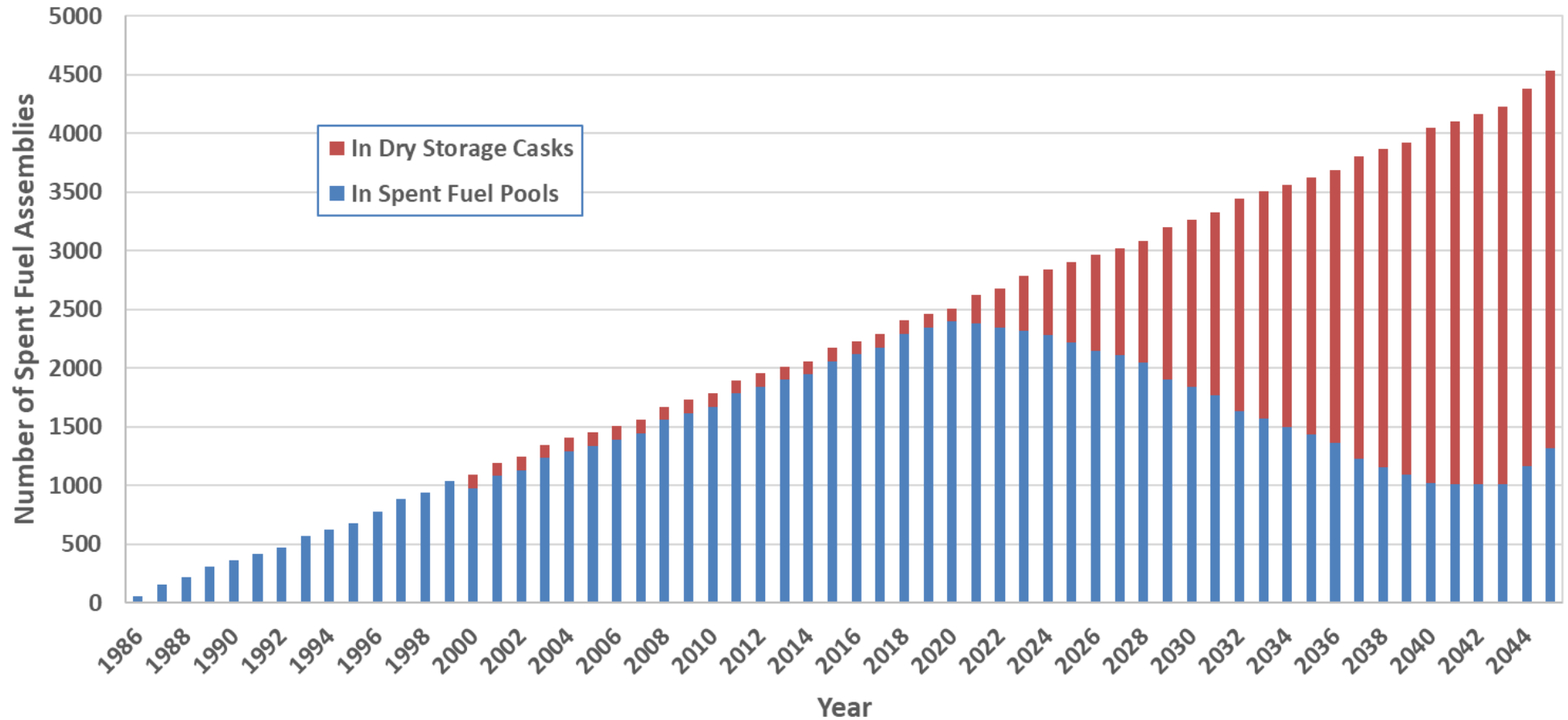
Event Description	Causes	Actions taken
Fire in the turbine lubrication, jacking and turning system tank room.	The mechanical seal for the turbine lubrication, jacking and turning system pump failed.	<ul style="list-style-type: none">• The fire fighting system automatically extinguished the fire• Failed pump replaced• Checks were done on equipment in the room to ensure no other damage.



Long Term Operation (LTO) - Spent Fuel assemblies discharged/ stored



Total Number of Spent Fuel Assemblies Discharged over Koeberg's 60 Years of Operation






Climate Change



- Nuclear plants are relatively resilient to climate change
 - <0.1% nuclear electricity production lost (1990 – 2020) due to weather events
- Site Safety Report was updated to consider impacts due to climate change
- Impacts due to CC expected to increase with time so studies and plant changes are in progress to consider improved response
 - e.g. max tolerable sea temp increased from 23°C to 25°C
- Combinations of effects is considered
 - e.g. tsunami + higher sea level + higher storm surge + high tide
- Koeberg design remains robust for more likely events (e.g. 100-year events) so focus is on less likely events (1 in 10 000 year-events or less)
- Clear guidance for entry into Unusual Event (e.g. wind speed > 95 km/h)



Higher ambient temperatures



Higher wind speeds, tornados, and cyclones



More intense and frequent drought



Increased likelihood of sea temperature events



Increased likelihood of marine invasives



High rainfall and thunderstorm events



Fire danger days



Concluding Remarks



Concluding remarks for PSIF to take note of:

- 1 Koeberg continues to operate **safely** and **reliably**.
- 2 The recent external reviews indicated that Koeberg's **nuclear safety** is **healthy**.
- 3 **Koeberg** is currently busy with **Outage 226 Preparation**.
- 4 As part of Plant Availability, **Outage performance** remains a priority **focus area**. Additional outage oversight meetings have been established to drive the required progress / productivity.
- 5 Koeberg continues to **prioritise** the **well-being** of **staff and contractors**.

Thank You!

