

Minutes of the Koeberg Public Safety Information Forum (KPSIF)

Date: 29 November 2012

Venue: Nuclear Auditorium – Bulk Stores Koeberg Nuclear Power Station

Chairperson: Vacant

Deputy Chairperson: Ms Smokie La Grange

ATTENDEES	REPRESENTATIVE ORGANISATION
Mr D La Grange	Resident
Mr M Haynes	Resident
Ms J Haynes	Resident
Mr E Hediger	Resident
K Schade	Resident
Mr R Mayhew	Resident
Ms S Mayhew	Resident
Mr I Iosipakis	Resident
Ms C Maigrot	Visitor
Mr H Maigrot	Visitor
Mr K Goebel	Melkbosstrand Private School
Mr L Ngembe	Private

OFFICIALS	DESIGNATION/ORGANISATION
MS D Joshua	Senior Advisor Stakeholder Management – Eskom Koeberg
Mr L Phidza	Stakeholder Management Manager – Eskom Koeberg
Mr K Engel	Plant Manager – Eskom Koeberg
Mr S Pienaar	Communication Officer – Eskom Koeberg
Mr D Nicholls	General Manager – Nuclear Engineering
Mr I Trollope	Emergency Management – Eskom Koeberg
Mr T Tselane	Senior Manager: Compliance Assurance and Enforcement Division (National Nuclear Regulator)
Mr M Ramerafe	Functional Co-ordinator Emergency Planning and Nuclear Safety (NNR)
Ms K Kline	Emergency Management Officer – Eskom Koeberg

1. Welcome

The Deputy Chairperson welcomed everyone to the PSIF meeting. She clarified the issue around the number of members that constitutes a quorum based on a discussion prior to the meeting. She confirmed that there is a quorum present for the meeting to continue as four members (as per the PSIF Constitution) constitutes a quorum. Mr Lewis Phidza, Koeberg Operating Unit Stakeholder Management Manager, conducted the safety evacuation briefing informing attendees about the safety protocol of the venue.

2. Apologies

The following apologies were tendered:

- Mr John Taylor (Neighbourhood Watch)
- Mr and Ms Williamson (Melkbosstrand Ratepayers Association)
- Ms Marissa Janse van Vuuren (DA councillor)
- Mr Gino Moonsamy (NNR)
- Dr Tim Hill (NNR)
- Mr Keith Featherstone (Eskom)

3. Acceptance of the Minutes of the previous Meeting

The Minutes were accepted by Ms Mayhew and seconded by Mr Maigrot with the following corrections. Remove Mr and Mr Mayhew's affiliation as Tableview Ratepayers Association members as they attend the PSIF as interested residents.

4. Matters arising

The only matter arising was from Mr Mayhew requesting feedback from the NNR on the progress of the Chairperson selection process. The Deputy Chairperson confirmed that it will be covered as an Agenda item under 5.2.

5.1 Koeberg Quarterly feedback by the Power Station Manager, Mr Riedewaan Bakardien

Overview:

- **Outage Performance** : on 25 November we've completed the 19th Outage on Unit 2 which was a 79 day outage (completed it on the planned date).
- **Plant performance**: Unit 1 is running well with the exception of one 6- hour shutdown due to a grid induced fault.

- **Leadership Focus:** the Koeberg management team has embarked on an significant leadership development programme for our managers to improve station performance which is also a power station focus area.
- **Operator Training Accreditation:** the Koeberg Operator Training accreditation was renewed through INPO in the US, which makes Koeberg the only nuclear power station outside of the US to be accredited.
- **ISO Certification:** Koeberg was ISO 9001 (quality) certified indicating that we have a robust quality management programme. In addition our ISO 14001 (environmental compliance) certification was renewed, indicating good environmental compliance.
- **Contamination Control:** we have seen good improvement in compliance to radiation contamination controls and performance in this area which puts us right up there with the best in the world.

Technical matters:

We've identified the hydrogen leak into the stator cooling of the electrical generator on Unit 2 on the non-nuclear side of the plant. It did not present any nuclear safety risk. However, it resulted in us shutting the plant down nine days earlier than initially planned; Risk was identified two months prior to the Outage.

Big work done during the Outage

Replacement of the Low Pressure Turbine Rotors and the Generator Rotor. This will result in an approximate 35MW power increase which translates to about a 3,5%.

Question by Mr Mayhew:

Are your contractors ISO 9001 accredited?

Answer by Mr Bakardien

Our contractors working on the nuclear side of our business are accredited to a quality standard, not necessarily only ISO. We do assess them to ensure they meet our quality standards.

Comment by Mr Nicholls

Currently we have the best safety record of all the power stations within Eskom.

Question by Ms Hediger

Has Eskom identified a site for the next nuclear power station?

Response by Mr Nicholls

Eskom has got three coastal sites allocated for future nuclear sites. They are Duynefontein, Bantamsklip (Pearly Beach), Thyspunt, (Cape St Francis). We own the land on all three sites. We are currently going through the Environmental Impact Assessment process. We hope to issue the final report to government by middle next year. The current indications suggest Thyspunt as the preferred site. You might have seen in the press recently that the government formally announced that Eskom has been assigned as the owner of all nuclear plants in the country. The

presumption is that will go through the commercial process for a selected vendor next year.

Comment by Mr Bakardien:

There is no firm decision on a new nuclear programme. We are busy with the preparatory phase. There is still a lot of work to be done and we are nowhere close to the procurement or tender phase as yet.

Question by Ms Hediger:

Is the decision to build the same kind of plant as Koeberg?

Answer by Mr Nicholls:

The National integrated resource plan talks of a Pressurised Water Reactor (PWR) similar to Koeberg. The indication from the Energy Minister is that we will go to the market early next year with the view to having a decision by the end of next year. It is of note that the Nuclear 1 deal that we were ready to negotiate in early 2008, was abandoned because of the economic status in the world. We went from a decision in Eskom to go to tender to a point where we could decide on the vendor and sign the contract in about nine months. So it's credible that we can have a government decision by early next year but it could be longer.

5.2 NNR Feedback on Koeberg Emergency Plan Exercise – Mr Mothusi Ramerafe (NNR)

The scenario simulated was based on the malfunctioning of the plant resulting in a release of radiological material which impacted the public. For this exercise we focussed mainly on off-site responses.

Areas tested were:

- Communication aspects which include the transfer of information between the Koeberg Emergency Control Centre (ECC) and The City of Cape Town Disaster Operation Centre (DOC)
- The Protection of the emergency workers by simulating a situation where response is required
- Physical availability of transport for evacuees
- Evacuation of the public (simulated)
- Activation, availability and operation of the Mass Care Centres (receipt and processing of evacuees at the Mass Care Centres)
- Arrangement to provide for evacuees at the Mass Care Centres
- Preparation of press releases and conducting of the press/media briefings/conferences

Summary of conclusions:

Procedural non-compliances noted based on the scenario

- At the Emergency Control Centre the checklists that were used and referenced in the Emergency Procedures did not comply with the format and findings and review of the documented license and licensee
- The switching of all of the Iodine filters were simulated but the doors of the Emergency Control Centre were not closed as is required
- Some of the information that should have been relayed to the ECC as per the logs as measured by Kilo Mobile 2 team – they were not transmitted to the field team leader (once information is received it is ultimately relayed to the Emergency Controller)
- With regards to the transport of the evacuees to the Mass Care Centre - there was no communication received at the Golden Arrow Bus Service Offices received from the City of Cape Town Disaster Operation Centre. This was due to the Telkom lines at Golden Arrow offices not being operational. The Golden Arrow Bus company is the bus company that will provide transport to evacuees in an emergency
- One of the dosimeters at Roadblock 26 was not zeroed – all dosimeters need to be zeroed to get an accurate reading. When there is a release that affects the public, several roadblocks are instituted as a means to prevent the public from entering plume affected areas - Roadblock 26 was selected and monitored on the day of the simulation.
- No press releases were sent to the SABC and the Koeberg map was not displayed at the SABC offices as outlined by the procedure and therefore not ready for use
- SABC Co-ordinator received regular updates on his cellphone from Disaster Management Operations Centre – according to the procedure, updates should be received via a landline
- According to the scenario the plume covered the Melkbosstrand subzone and this was not realised until notified by the umpire
- The CoCT DOC documentation was not signed/approved by the Head of Disaster Operations Centre before it was sent out
- Time set in fax machine in the ECC was one hour ahead – this was reflected in the faxes sent out
- In the Joint Media Centre, even though the press release was drafted it was not included in all the media packs

Conclusion (NNR)

In general the response by Eskom and the intervening organisations with regards to

compliance to procedures and readiness of facilities and equipment was overall acceptable.

Question by Mr Mayhew

We don't understand the abbreviations used, please explain the meanings of the words, PAM, FTL, KM2, RPM

Answer by Mr Ramerafe

PAM – Protective Action Management System

FTL – Field team leader (provides instructions and manages the monitoring vehicles)

KM2 – Kilo Mobile 2 (A monitoring vehicle call sign)

RPM – Radiation Protection Monitor (Individual in charge of taking radiological measurements in the field)

Question by Mr Mayhew

I have a big issue with the fact that you could not get hold of Golden Arrow Bus Services, that press releases were not signed off, incorrect times on faxes and important documentation from the CoCt not signed. How can this be acceptable?

Response by Mr Ralegoma (NRR)

We've made a mistake in the beginning of presentation by highlighting only the non-compliances. We have submitted a very comprehensive and balanced report to Eskom which outlines both the positives and negatives. The positives far outweigh the negatives. We have trended the process from 2008 to 2012 objectively – as the Regulator we pick up all the things that Eskom as an operator has omitted. This is then communicated to Eskom who has to address these by 31 December 2012. We have identified a number of positives but in the presentation we've only focussed on the non-compliances. The Negatives are only 20% of the overall findings with 80% being positive and compliant. For the purpose of the public and in the interest of time we focussed merely on the findings. Many of the issues are administrative in nature therefore the turnaround time of 31 December 2012 is reasonable.

Question by Mr Mayhew

I understand where you are coming from. 80% of the findings are brilliant however, the 20% that are non-compliant contain some serious transgressions. That is not acceptable. This was just a simulation, what if it was a real emergency, what would happen? You've said the findings were acceptable, how it can be when some of the transgressions are so serious?

Question by a member

You are speaking about the possibility of a disaster as one in a hundred years. Is it possible to explain what is released in the atmosphere, what this release contains, and how it is released? I need to understand the science of a disaster.

Response by Mr Trollope

With this type of reactor, significant heat is required and produced to drive our turbines that produce electricity. If something should happen as in the event of the Fukushima incident, it would be beyond Koeberg's design basis (Koeberg has been designed in such a way where we try to anticipate 99% of possible accidents).

In the event of inadequate cooling of the core, there could be core damage or melting of the core. Due to the fact that the pressure would increase due to water flashing into steam, the pressure inside the reactor building could increase if safety systems do not operate as required. If the reactor building should leak, radioactive material in the form of dust, halogens, noble gases or vapours would be released into the environment. Should an individual be exposed to a very large amount in a short period of time, significant radiation damage could occur to the individual.

The Emergency 5 km Zone, which requires automatic evacuation once there is a potential of a release, ensures that no individual would be potentially exposed to levels that would result in a loss of quality of life due to loss of limb or death.

Increased risk of cancer is possible in the event of exposure to radiation. One of the most common types of cancer is thyroid cancer which is caused by the inhalation of radioactive iodine. To assist in ensuring that the thyroid gland does not absorb radioactive iodine, potassium iodate pills will be issued and once taken will saturate the thyroid gland with stable non-radioactive iodine. In the event that radioactive iodine is then breathed in it will be excreted by the body.

The mitigation of a nuclear accident pivots around ensuring that there is no possible leak of radioactive material to the environment even should it mean that Koeberg is destroyed in such a way that it will never run again to produce electricity.

5.2.2 Recruitment of the PSIF Chairperson and Deputy Chairperson by - Mr Ramerafe

Comment by Mr Mayhew

I feel that the recruitment for PSIF Chair and Deputy Chair is really failing. You selected a woman who did not reside in the area, you chose a man who wouldn't do it. We have someone who is more than willing who is still waiting. How do you select for these positions?

Response by Mr Ramerafe

The position of the chairmanship of the PSIF Forum: The NNR did not receive nominations from the forum members.

Comment by the Deputy Chair

I've definitely put in my nomination form.

Comment by Mr Thabo Tselane

In the last meeting nominations forms were distributed. The agreement was that you go out and advise people that you would want to be chairperson and thereafter submit a nomination form to the NNR so it could get the process going.

Comment by Mr Mayhew

Will we have a decision by the first meeting next year?

Response by Mr Tselane

The idea was that if we come to this meeting, there will be nominations. We thought it would be an easy process whereby we'd receive the nomination so that a decision could be made by the end of the year. The current situation is that we do not have any nominations so I'm requesting that we get the nomination form as soon as possible so we can expedite the process and possibly have a decision by the next meeting. So the onus is on you - the ball is in your court to expedite the process.

Comment by Deputy Chair

I have faxed my nomination form to the NNR, so there should definitely be one nomination form for Chairperson.

The problem is that we do not have people that are prepared to volunteer. It's not just with the Koeberg PSIF. I am finding it with the Ratepayers Association, Trustees for an Old Age Home as well as the Blaauwberg Animal Trust and various other organisations. People do not want to volunteer.

Comment by Mr Ramerafe

What Mr Moonsamy has planned as a next step to place an advert in the newspaper in early January 2013, inviting nominations for these positions.

Response by Mr Phidza

Currently we do not have any nominations for Deputy Chair. We will hand out nomination forms today and Eskom as the secretariat will ensure once we receive any nomination forms, they do reach the NNR.

Comment by Mr Mayhew

So what you are saying is that we are looking for a Deputy Chair rather than a Chair?

Response by Mr Phidza

According to the Constitution the Deputy Chair has the same powers as a Chairperson hence she is able to chair the meeting. However, she has been nominated to stand as Chairperson; this means that you still need a Deputy Chair.

Ms La Grange (Smokie) was nominated last time and she accepted. So the NNR has more than enough power to move the process forward. The members need to realise that you are running a risk that if there is no Deputy Chair by law, if she's not available for a meeting, the meeting cannot continue. So that is a huge risk.

6. General:

Comment by the Deputy Chair

I've also have a comment on your presentation. It's Melkbosstrand not Melkbos. I've had a huge argument recently with the people from the Roads Association about it not being Melkbos but Melkbosstrand. It's one letter short of Bloubergstrand and they are able to say Bloubergstrand.

Question by a member

If there's an explosion on the Steam Generator and steam escapes into the atmosphere. I need to understand what we are scared of?

Answer by Mr Nicholls

Firstly I don't understand how we can have a Steam Generator explosion. What we have in the core at the moment is a little bit of water, zirconium (a metal similar to magnesium), and uranium dioxide (the fuel that splits). Largest components released is Cesium 137 and Iodine 131, there's a lot more. If we stop cooling the core (turn the reactor off), when the reactor is at full power about 94% of the power comes from the chain reaction and about 6% comes from the split fragments decaying further away. When we turn off the reactor, you don't get rid of the 6% - we've got about 230 MW of thermal heat being generated from this decay process. If we shut down the fission reaction and we shut down the 3000MW of heat generated in the core down to about 230MW then the power generated from this decay process, keeps on going down to about 30MW in an hour. If we remove the cooling from the core (remove the water), as it heats up it gets to a point at about 1200 degrees centigrade when the zirconium that clads the fuel, becomes more attractive to the oxygen in steam than the hydrogen it's attached to. The zirconium grabs the oxygen and becomes zirconium oxide and hydrogen becomes free hydrogen. With the Fukushima disaster, the explosion was caused by that hydrogen. The actual melting of the core is driven by this reaction called a steam zirconium reaction. At high temperature it releases into the atmosphere fission products called noble gasses known as xenons and kryptons - they are highly radioactive but they are noble gasses – they don't stay anywhere - you breathe them in and breathe them out. They usually have a shine so when they come out of the plant they will glow down on top of you, you'll get a dose but it disperses very quickly. The big ones that are released are Cesium 137 and Iodine 131. Cesium 137 has a half-life of 30 years and Iodine 131 has a half-life of eight days. The problem with the Iodine is that it concentrates in your thyroid gland and what the iodine tablets do, is to overload your body with Iodine so it doesn't absorb anymore. That is what the Russians didn't do when Chernobyl blew up. It is in two forms, both organic and inorganic, and that's the reason why we have milk bans because it goes into the grass, goes into the cows and goes into the milk. However, it doesn't last for too long – it only last for about a month. Cesium 137 is deposited on the ground for much longer. The likelihood of melting the core according to our current calculations is about once

every 100 000 to 500 000 years. If we do melt the core, it's essentially a one in about 10 or 20 chance in a million that we will melt the containment building. The Koeberg tsunami design height is approximately five times the Fukushima design height, as it was first designed. Although Fukushima gave us a huge shock, Tsunamis are not a big thing in Cape Town. There is nothing from the Fukushima lessons learnt that says we are badly designed; there's a lot we can do a lot better but if Fukushima happened to us today we would probably survive.

Question from a member

Are we higher than sea level? I thought the reactor was situated low down.

Answer by Mr Nicholls

Our terrace is about 8metres above sea level. You would have to get the water onto the terrace at least 8metres high to get into the plant. Once the water goes over the terrace we'd be in trouble.

Comment by Mr Mayhew

Are we going to receive our 2013 calendars soon? Is it possible that we can put a notice in the front with the words – "*Important! Please read carefully and store in a safe place in case of emergency*". The first time I did not realise the importance and did not even open it – not realising the important Emergency Planning information contained in the back pages of the calendar.

Comment by Mr Phidza

It is a good comment. By next week we will be distributing the 2013 calendar. It contains a letter from the PSM (Power Station Manager) unpacking and highlighting the importance of the Emergency Plan as well as a separate leaflet with information about the siren test. We will however, be rolling out a separate campaign for the siren testing. By next year March, at our next meeting, please provide us with feedback on the 2013 calendar. In terms of putting the sticker saying "important, please read carefully and store in a safe place in case of an emergency" – it is already too late as the packages are already completed, however we will consider it for next year, for the 2014 Calendars.

Question by Mr Mayhew

Coming from England I am always aware of terrorism. Are there any security measures in place to prevent real damage to Koeberg by terrorism?

Response by Mr Bakardien

Today we had a meeting with the Security Stakeholders that are part of the Security arrangement for Koeberg. We met with stakeholders such as the Defence Force, Melkbosstrand SAPS, Milnerton SAPS, the State Security Agency, National Intelligence, Hostage Negotiations - a very broad range of stakeholders. We meet on a regular basis and we discuss exactly what the threats are. It's fair to say we do have high degree of paranoia about security at Koeberg. Because of this, our security guards on site are armed and highly trained. They regularly enter shooting

competitions to ensure they are highly trained and up to standard. This is similar to the EP exercise and drill security exercises to ensure we can effectively deal with terrorism and the threats we could typically get at Koeberg. We recently attended training around security from the IAEA (International Atomic Energy Agency). Based on the feedback we've received in terms of the measures we've taken, we are not behind anyone in the world in protecting a nuclear power station.

Question by a member

This is our first visit to this Forum as a resident. I know its common practise to have these abbreviations. Can it be extended so the layman can understand and know what we are reading? This could be important aspect to follow in terms of understanding the Emergency Plan.

Response by Deputy Chair:

That is a good suggestion especially for newcomers. Can we work on an abbreviation list to be added to the Minutes?

Response by Mr Phidza:

The abbreviations referred to are covered in the calendar; we can however, look at adding them to the Minutes.

Question by Mr Lulama:

Are there any threats of load shedding?

Response by Mr Bakardien:

In terms of load shedding, it's important to note that we've got new capacity that has come on line in the last few years such as Ankerlig (Power Station, Atlantis) and Gourikwa (Mosselbay). We're also building two big new coal stations up-country namely Medupi and Khusile. Eskom is running flat out to keep the lights on. Our first priority in Eskom is to keep the lights on. Everything we do is with the aim to keep the lights burning. We track capacity that we have on a daily basis – how many power stations are running, how much power is available and what the demand is. We ensure we have a healthy margin on a daily basis (2000 to 4000 MW) in case a power station trips up-country or Koeberg has to come down in power –there's always the ability to keep the lights on. In the last few years we have been very successful with this. Yes, lights go off in your area/house at times but that could be due to a faulty breaker and not because Eskom has a shortage of electricity. Next year we'll see one of our big coal stations, Medupi, coming on line and that will assist us with building that buffer between what people are using and what we have available so that we don't have load shedding.

Comment by Mr Phidza

Every Tuesday and Friday we release the weekly status report stating which capacity is available, how much peak demand is met. We also communicate how many units are planned for maintenance and how much capacity is unavailable due

to forced outages. If members are interested, please let our secretariat know, so we can forward you the information on a weekly basis.

Comment by the Deputy Chair:

Please convey our thanks to the caterer for the lovely caramel horns.

7. Suggested topics for the next Meeting:

- Quarterly Koeberg feedback
- NNR progress report back on the implementation of the EP exercise findings
- Progress on the position of Chair (NNR)
- Comments on the 2013 Calendar

Comment by Mr Mayhew

Can we have someone senior from SAPS, Ambulance Service, Fire Services to explain how their role fits into the Emergency Plan? It feels like the Emergency Plan is not co-ordinated and effectively filtered down to the lower levels in terms of the people who have to carry out the instructions at the bottom.

Response by Mr Phidza

We will co-ordinate with the City of Cape Town and arrange for someone to address the members. We will probably have to stretch it over a few meetings so as to cover all the aspects.

Question by Mr Goebel

I'm asking on behalf of the Melkbosstrand Private School – they've completed an evacuation plan which the council referred to the NNR for approval so that it ties in with the Emergency Plan that Eskom has got. I just need to speak to someone who can assist us to get the plan signed off.

Response by Mr Phidza

We will schedule a meeting with you and discuss the plan and the next steps. (Details of Mr Klaus Goebel - Melkbosstrand Private School, 082 464 8700).

The Deputy Chairperson thanked everyone who attended the PSIF meeting and wished them well for the festive season. The meeting was adjourned at 08:32.

8. Date of the next Koeberg PSIF meeting is scheduled for Thursday, 14 March 2013 at 19:00 at the Nuclear Auditorium, Bulk Stores.

P.T.O for the abbreviation list

Abbreviation/Definition list

Abbreviation	Description	Abbreviation	Description
KNPS	Koeberg Nuclear Power Station	CoCT	City of Cape Town
KOU	Koeberg Operating Unit	IAEA	International Atomic Energy Agency
NNR	National Nuclear Regulator	DOC	Disaster Operations Centre
KPSIF	Koeberg Public Safety Information Forum	SABC	South African Broadcasting Corporation
ISO	International Standards Organisation	mSv	Millisieverts
PSM	Power Station Manager	EP	Emergency Plan
SAPS	South African Police Service	UPZ	Urgent Protective Action Planning Zone
MW	Megawatts	Emergency	An event that requires taking prompt action, or the special regulation of persons or property, to limit the risk to people's health, safety or welfare, or to limit damage to property or the environment
ECC	Emergency Control Centre	Evacuation	The rapid, temporary removal of people from the area to avoid or reduce short-term radiation exposure in the event of an emergency
Emergency Plan	A document describing the organisational structures, its roles and responsibilities, concept of operation, means and principles for intervention during an emergency	Plant	Nuclear Power Station with associated components, machinery, equipment or devices

Abbreviation/Definition list

Abbreviation	Description	Abbreviation	Description
Public Notification	Notification to the public of an emergency and the appropriate protective actions to be taken by using the installed siren and loudspeaker system, as well as local authorities, local radio and television station.	Radiation	Energy released in the form of particles or electromagnetic waves during the breakdown of radioactive atoms.
Release	The controlled or accidental discharge of radioactive substances into the environment	Sheltering	A protective action whereby members of the public stay indoors with windows and doors closed, to reduce their exposure to radioactive material in an emergency situation.
Accident	An unintended event, including operating errors, equipment failures or other mishaps.	Disaster Management	A continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at: <ul style="list-style-type: none"> a) Preventing or reducing the risk of disaster b) Limiting the severity or consequences of disasters c) Emergency preparedness d) Responding rapidly and effectively to disaster; and e) Post-disaster recovery and rehabilitation