



KOMATI POWER STATION ATMOSPHERIC EMISSIONS LICENSE AUDIT REPORT

REPORT: 17 February 2016

Compiled by:

Zituta N (Environmental Specialist)

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Accepted By:

**Precious Mohlala
Environmental Manager**

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21/03/2016

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ESKOM KOMATI POWER STATION

EXECUTIVE SUMMARY

Leroy Construction and Projects has been appointed by Eskom Holdings SOC to conduct compliance audit on Komati Power Station Environmental Atmospheric Emissions License (AEL) in terms of Section 43 of the National Environmental Management Air Quality Act, 2004.

The objective of the audit was to determine Eskom Komati Power Station compliance with the conditions of the AEL. The audit scope was covering all licenses, permits and Environmental Authorisations for the power station. Each of these authorisations has a separate report for submission purposes to different Licensing Authorities. The criteria used was based on:

- The AEL conditions.
- Legal requirements applicable to Eskom Corporate and those specific to Komati Power Station activities.
- EA-7/04: Legal Compliance as part of Accredited ISO 14001: 2004 Certification.

The audit methodology used to determine Komati Power Station compliance to the above criteria was through audit techniques such as documents review, use of audit checklist based on the AEL conditions, personnel interviews, and observations during site inspections.

A number of 4 non-compliances have been identified during the audit. A detailed summary of the audit findings, that is, positive and negative observations is outlined in the appended checklist. The compliance status was expressed as: C – for compliant, NC – non-compliant, N/A– not applicable or NYA – not yet applicable.

Team work and the effort made by the team to ensure compliance with this license conditions has been verified throughout the audit. It is recommended that Komati Power Station should take proper corrective actions to close the non-compliances raised and monitor effectiveness of controls used to ensure continued compliance with legal requirements applicable to its activities.

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Table 1: A detailed explanation of the compliance levels.

ACRONYMS

EA-7/04	European co-operation for Accreditation
EA	Environmental Authorisation
RoD	Record of Decision
EMPr	Environmental Management Programme
DEA	Department of Environmental Affairs
RTS	Return to Service
WUL	Water Use License
AEL	Atmospheric Emissions License
NEMA	National Environmental Management Act
NEMAQA	National Environmental Management Air Quality Act

1. INTRODUCTION

Leroy Construction and projects was appointed by Eskom Komati Power Station to undertake an assessment on the AEL conditions issued to the station in terms of Section 43 of the National Environmental Management Air Quality Act, 2004. The objective of the audit is to determine compliance with the AEL conditions. The compliance audit followed the conditions listed in the AEL with: License no: 17/4/AEL/MP313/12/12. The audit as per scope outlined below was conducted over a period of three weeks, where it started with a kick off meeting on 8 of February followed by desk top review on documentation from 9 February, and development of audit checklists based on the licenses/permits and authorisations to be audited until 12 February. On site audit was conducted from 15 -18 February, followed by 2 week's compilation of each authorisation report's and incorporation of client's comments to the final reports submitted on 4 March 2016.

1.1 Scope

The scope of work was to conduct compliance audit on legal and other requirements applicable to Komati Power Station for the following authorisations with a separate report for each license or permit for submission to relevant regulatory bodies:

- Return to Service RoD
- Ash Dam Extension RoD
- Ash Dam Waste License
- Section 24G Environmental Authorisation
- **Atmospheric Emissions License**
- Water Use License
- Coal Stock Yard Capacity Increase license
- Strategic Building RoD
- Other Requirements pertaining to Eskom Holdings SOC and Komati Power Station activities

An audit plan was developed to indicate how the above scope of work would be executed and to notify the relevant personnel on the audit dates on their areas of responsibility.

1.2 Objective

The objective of the audit was to evaluate Eskom Komati Power Station compliance with its legal requirements as listed above and other requirements to which the organization subscribes. This report will focus on the AEL conditions issued to the station in terms of Section 43 of the National Environmental Management Air Quality Act, 2004.

2. AUDIT METHODOLOGY

The audit methodology used to determine Komati Power Station compliance with the AEL conditions was through audit techniques such as documents review, use of audit checklist based on the AEL conditions, personnel interviews, and observations during site inspections. The station performance in meeting the conditions of the AEL was assessed based on the following criteria:

- The AEL conditions.
- Legal and other requirements applicable to Eskom Corporate and those specific to Komati Power Station activities.
- EA-7/04: Legal Compliance as part of Accredited ISO 14001: 2004 Certification.

After which, the performance output or compliance status was rated as compliant, non-compliant and not applicable or not yet applicable. Table 1 below provides a more detailed explanation of the applicability of the said compliance levels.

Table 1: A detailed explanation of the compliance levels.

Compliance Status	Explanation
1. Compliant	Komati Power Station could provide evidence (visual and/or documented) of compliance with the condition or requirement and/or relevant implemented actions.
2. Non-compliance	Specified conditions, commitments and documents were not in place or implemented according to the requirements of the AEL and or best practices. These actions could potentially result in a direct negative impact on the surrounding environment and thus need to be rectified.
3. Not applicable	These are conditions that are not required during the specified phase or are not deemed practical during the operational phase.

3. AUDIT RESULTS

This section of the report shows the station performance in terms of fulfilling the AEL conditions as displayed in appendix 1 below. The station is working hard in terms of complying with this AEL as it meets most of the conditions. However, there are critical areas of concern, such as, conditions 6.1; 7.2.6; 7.5 & 7.7 where it needs to focus on with immediate effect.

4. CONCLUSION AND RECOMMENDATIONS

The audit verified compliance against 45 conditions on the AEL. Of the 45 conditions, the operation achieved a compliance index of 91% (41 of 45). This compliance is above "acceptable compliance index" of 80%. This is highly commendable, and it displays the amount of effort and commitment the operation has put to ensure compliance with the AEL conditions. However, it is recommended that proper corrective actions should be effected to close the raised non-compliances. It is further recommended that the auditee should attach a level of risk into the non-compliances indicated in the appended checklist. Those that equate to low risk should be addressed within six months, medium within three months and high risks within a month.

5. REFERENCES

- Atmospheric Emissions License issued in terms of Section 43 of the National Environmental Management Air Quality Act, 2004, License no: 17/4/AEL/MP313/12/12.
- Internal Compliance Audit, dated September 2015

Atmospheric Emissions License: License no: 17/4/AEL/MP313/12/12

NR	CONDITION	COMPLIANCE STATUS C/C/NA	COMMENTS/REMARKS
4	General Conditions		
4.1	Process and ownership changes The licence Holder must ensure that all unit processes and apparatus used for the purpose of undertaking the listed activity in question , and all appliances and mitigation measures for preventing or reducing atmospheric emissions, are at all times properly maintained and operated.	C	The Electrostatic Precipitator (ESP) is in place to mitigate atmospheric emissions.
	No building, plant or site of works related to the listed activity or activities used by the Licence Holder shall be extended, altered or added to the listed activity without an environmental authorisation from the competent authority.	C	No buildings are extended nor added to these listed activity.
	Any changes in processes or production increases, by the Licence Holder, will require prior approval by the Licensing Authority	C	There were no changes in processes or increases in production, since the issuing of the licence. The electricity output was always below 950MW since all units returned to service in 2011.
	Any changes to the type and quantities of input materials and products, or to production equipment and treatment facilities will require prior written approval by the Licensing Authority.	C	There were no changes on type and quantities of input materials and products.
	Licence Holder must, in writing, inform the Licensing Authority of any change of ownership of the enterprise. The Licensing Authority must be informed within 30 (thirty) days after the change of ownership.	C	Currently, there is no change of ownership. Ownership is still Eskom Holdings SOC Limited.

NR	CONDITION	COMPLIANCE STATUS C/CNC/NA	COMMENTS/REMARKS
	The Licence Holder must immediately on cessation or decommissioning of the listed activity inform, in writing, the Licensing Authority.	C	Not applicable at this stage, as the power station is still operating.
4.2	General duty of care The Licence Holder must, when undertaking the listed activity, adhere to the duty of care obligations as set out in section 28 of NEMA	C	<ul style="list-style-type: none"> Komati Power Station has Emission's Work Group committee that deals with emission issues, verified minutes of the meeting hold on 21/01/2016. Also have Komati Emission's what's up group to monitor emissions.
	The Licence Holder must undertake the necessary measures to minimise or contain the atmospheric emissions, as set out in section 28 (3) of the NEMA.	C	Have necessary control measures in place, such as, ESP to control emissions.
4.3	Sampling and for analysis requirements Measurement, calculation and /or sampling and analysis shall be carried out in accordance with any nationally and internationally acceptable standard. A different method may be acceptable to the Licensing Authority as long as it has been consulted and agreed to the satisfactory documentation necessary in confirming the equivalent test reliability, quality and equivalence of analysis.	C	This function is outsourced to a service provider, relevant documentation was verified.
	The licence Holder is responsible for quality assurance of methods and performance. Where the Licence Holder uses external laboratories for sampling or analysis, accredited laboratories shall be used.	C	The service providers use accredited laboratories for sampling and analysis.
4.4	General requirements for licence holder The Licence Holder is responsible for ensuring compliance with the conditions of this licence by any person acting on his, her behalf, including but not limited to, an employee, agent, sub-contractor or person rendering a service to the holder of the licence.	C	The Licence Holder is conducting Environmental Legal Compliance Awareness from Top Management through management presentations to general employees and contractors through SHE meetings and monthly themes.

NR	CONDITION	COMPLIANCE STATUS C/NC/NA	COMMENTS/REMARKS
	A copy of the licence must be kept at the premises where the listed activity is undertaken and be made available to authorities when requested.	C	A copy of the licence was available at the Environmental Department.
	The Licence Holder must inform, in writing, the Licencing Authority of any change to its details including the name of the emission control officer, postal address/or telephonic details.	C	There were no changes on the ECO, it is still Mr Rudi Van Der Wal, the Power Station Manager.
	The Licence Holder must submit an Emission Offset Program to reduce PM Pollution in the ambient /receiving environment by the 31 st March 2016	C	Eskom, Centre of Excellence Air Quality Division submitted a letter to the Licencing authority on 10 Feb 2016, informing them of the delay (due to approval of the plan by EXCO) on submitting the air quality offset implementation plan by 31 March 2016. They proposed 30 April 2016, and have not received the response yet from the Licencing Authority.
4.5	Statutory Obligations The Licence Holder must comply with the obligations as set out in Chapter 5 of the Act.	C	There were no non-compliances reports with regards to chapter 5 of the Act.
4.6	Payment of atmospheric emission licence processing fee The Licence Holder will pay the Licencing Authority the processing fee of the variation of this Atmospheric Emission Licence on the receipt of the invoice.	C	Although there was no proof of payment for the processing fee of the Atmospheric Emissions Licence, there was communication from authorities indicating that when the Licence Holder requests certain changes and the changes are effected on the licence, it will be then that they will pay for the processing fee.
6	Raw Materials and Products		
6.1	Types and quantities of Raw Material used In Production Process: Coal – permitted consumption is 460 000 tons/month	C	For the past three (3) months, November 2015, December 2015 and January 2016, the coal consumption has been below the permitted limit per month.

NR	CONDITION	COMPLIANCE STATUS C/NC/NA	COMMENTS/REMARKS
	Fuel oil- permitted consumption is 5000 tons/month	NC	In September and October 2015, fuel oil consumption has exceeded the permitted consumption limit. This has been reported to the Licensing Authority on a letter dated 28/10/2015 by the PSM. The limit was exceeded as a result of instability in combustion units 1-3 due to the burner design. It was recommended that these units be run with oil support when necessary with a maximum of two oil burners. In addition to this, the Eskom Centre of Excellence is currently redesigning the Pulverised Fuel burners on Units 1, 2 and 3. The scope of the full redesign would be completed by 30 December 2016
6.2	Production rates Electricity- 950 mw/month Ash -- 160 000 tons/month	C	Electricity as well as Ash production rates are below the permitted limits per month.
6.3	Material used in Energy Sources Coal	C	The results of this condition are the same as in 6.1
	Fuel oil	NC	See section 6.1
6.4	Sources of Atmospheric Emission		
6.4.1	Point Source Parameters Point source (S1) - New Smoke Stack Flue 1 (U 1-5) Point source (S2) - New Smoke Stack Flue 2 (U 6-9)	C	This condition is giving general information about the point source parameters.
6.4.2	Area and /or line parameters A1: Coal stock yard Height of Release above ground (m) Length of area Width of area Emission hours	C	This condition is giving general information about the point source parameters.

NR	CONDITION	COMPLIANCE STATUS C/C/NA	COMMENTS/REMARKS
	A2: Ash Disposal Facility Height of Release above ground (m) Length of area Width of area Emission hours A3: Unpaved Roads Height of Release above ground (m) Length of area Width of area Emission hours		
7	Appliances and Measures to Prevent Air Pollution		
7.1	Appliances and control measures S1 (East Flue Stack) and S2 (West Flue Stack)	C	For both S1 and S2, abatement equipment control technology is in place.
7.2	Point source maximum emission rate (under normal working conditions) Boiler (East Flue Stack) – PM maximum release rate: 100/50 daily in 24 hours U1,U2,U3,U4,U5 – SO ₂ maximum release rate: 3500/2600 daily in 24 hours Boiler (West Flue Stack) U6,U7,U8 &U9 – NO _x maximum release rate: 1300/750 daily in 24 hours	C	Although on 27 January 2016, the permitted limit was exceeded due to the lack of SO ₃ injected to the ESP's, the incident was reported to the Licensing Authority in terms of section 30 of NEMWA. The report receipt was acknowledged by the department on 02/02/2016.
7.2.1	The Licence Holder must report its operational performance against the conditions of the licence at least on a bi-annual basis, to the Licensing Authority	C	Monthly and bi-annual operational performance reporting to the Licensing Authority is done to fulfil this condition. The 1 st report was from April 2015 to September 2015 and the 2 nd one was from November 2015 to January 2016.

NR	CONDITION	COMPLIANCE STATUS C/NC/NA	COMMENTS/REMARKS
7.2.2	This operation is located in the HPA designated are. Further review of the set conditions may be introduced to align to the implementation of the Highveld Air Pollution Priority Area interventions	N/A (at this point in time)	For now, further review of the set conditions is not done yet.
7.2.3	A copy of this AEL shall be retained at a place convenient to be produced in case authorities would like to view it	C	A copy of the AEL was available and verified at the Environmental Department.
7.2.4	All records related to operational performance in terms of this licence must be maintained and be kept for at least five (5) years	C	Verified the existing operational performance data kept on Digital Control (DC) system and PI system.
7.2.5	The Licence Holder shall be liable to prevent and mitigate against the risk of harm to human health and the environment, and shall put in place measures necessary to prevent and/mitigate against such risks	C	Daily emission monitoring is done according to emission response procedure, Doc no: 285-157643, dated 25/03/2015.
7.2.6	All units must be fitted with continuous emission monitoring equipment for PM; SO ₂ and NO _x by 01 June 2015	NC	Not all units are fitted with continuous emission monitoring equipment. There is one emission equipment for East Stack for units 1-5 and one emission equipment for West Stack for units 6-9.
7.3	Point Source – Maximum Emission Rates		
7.3.1	The Licence Holder must take all reasonable measures to control atmospheric emissions during start –up, maintenance and shut down operations.	C	The Licence Holder is taking reasonable measures with the help of ESP to control atmospheric emissions during start –up, maintenance and shut down operations and report to authorities where there are reportable incidents.
7.3.2	Normal maintenance and shut-down conditions shall not exceed a period of forty eight (48) hours. <i>Should maintenance, upset and shut down conditions exceed a period of 48 hours, section 30 of the National Environmental Management Act, 107 of 1998 (as amended) shall comply.</i>	C	The 48 hours period was exceeded on the 27 January 2016, however, the due process was followed to report the incident to the department in terms of section 30 of the Act.
7.3.3	PM emissions should be below the limit value within 48 hours of synchronising with the grid during a hot start,	C	Verified West stack emissions for 16 January, after a cold start for unit 6 and hot start for unit 8.

NR	CONDITION	COMPLIANCE STATUS C/INC/NA	COMMENTS/REMARKS
	and below the limit value within 72 hours of synchronising with the grid during a cold start.		
7.3.4	Reporting on particulate emissions to commence 24 hours after the units has synchronised with the grid during start-up.	C	Verified emissions after a light up on 15 and 16 February 2016.
7.3.5	During start-up, maintenance and shut-down, or in the event where there is an indication of adverse impacts to human health and/or the environment, the Licence Holder must take appropriate measures to avoid such adverse impacts from occurring and /or recurring.	C	The Licence owner is taking appropriate measure to avoid adverse impacts to human health and the environment.
7.3.6	In order to put into effect section 42 of the Act , the Licence Holder shall, on receipt of the Atmospheric Emissions Licence, undertake an investigation to measure, monitor and report on point source emissions released during start-up, maintenance and shut-down conditions. Such measurement and reporting shall be carried out in terms of the measurement, monitoring and reporting requirements set out in the Government Notice Number 893 of 2014	C	The licence holder is undertaking monitoring, measurement and reporting on point source emissions released during start-up, maintenance and shut-down conditions.
7.3.7	In order to put into effect the provisions of section 42 of the Act, the Licensing Authority may from time to time review the conditions set herein and may set maximum emission limits to be adhered to by the Licence Holder during start-up, maintenance and shut-down conditions.	C	The licencing authority has not reviewed the conditions of this licence to effect the conditions of section 42 of the Act.
7.4	Point Source Emissions Monitoring and Reporting Requirements Point source emission sampling and monitoring shall be conducted continuously with monthly reporting for the following parameters: PM; SO ₂ & NO _x	C	

NR	CONDITION	COMPLIANCE STATUS C/NC/NA	COMMENTS/REMARKS
7.4.1	Sampling and monitoring method as well as the sampling duration shall be carried out in terms of Government Notice Number 893 of 2013 (as referred to in schedule A)		Point source emission sampling and monitoring is conducted for the identified parameters according to Government Notice Number 893 of 2013.
7.5	<p>Area and /or line source - management and mitigation measures</p> <p>A1 Coal Stockpile: Specific Measure - stock pile compaction and water trucks for dust suppression Frequency -immediate</p> <p>Monitoring measure – Visual inspection, and dust fallout monitoring currently taking place as part of fugitive emission management plan</p> <p>Contingency measure - Water spraying on affected areas</p> <p>A2 Ash Disposal Facility: Specific Measure – Wet Ash Method (Hydrovacs and Truck Water Tanks) Frequency -immediate</p> <p>Monitoring measure -- Visual inspection, and dust fallout monitoring currently taking place as part of fugitive emission management plan Contingency measure - Water spraying on affected areas</p> <p>A3 Unpaved Roads:</p>	<p>C</p> <p>C</p> <p>C</p> <p>C</p> <p>C</p>	<p>On site visual inspection and a dust suppression checklist dated 01/01/2016 - 07/01/2016, which is completed every time water trucks are spraying water to suppress dust was verified.</p> <p>Dust fall out monitoring is currently taking place as part of fugitive emission management plan.</p> <p>On site visual inspection and a dust suppression checklist dated 01/01/2016 - 07/01/2016, which is completed every time water trucks are spraying water to suppress dust was verified.</p> <p>Dust fall out monitoring is currently taking place as part of fugitive emission management plan.</p>

NR	CONDITION	COMPLIANCE STATUS C/NC/NA	COMMENTS/REMARKS
	<p>Specific Measure - Water trucks for dust suppression Frequency -immediate</p> <p>Monitoring measure – Visual inspection, and dust fallout monitoring currently taking place as part of fugitive emission management plan Contingency measure - Water spraying on affected areas</p> <p>The Licence Holder shall ensure that, a three month running average must not exceed the limit value for adjacent land use according to dust fall out standards promulgated in terms of Section 32 of the NEM:AQA in eight principal wind directions (refer to KPS Fugitive Emissions Management Plan)</p>	<p>C</p> <p>NC</p>	<p>On site visual inspection and a dust suppression checklist dated 01/01/2016 - 07/01/2016, which is completed every time water trucks are spraying water to suppress dust was verified.</p> <p>Dust fall out monitoring is currently taking place as part of fugitive emission management plan.</p> <p>The fall out dust three month running average limit for adjacent land use has exceeded the standards in terms of Section 32 of the NEM:AQA, for the following residential monitoring points: EKO₄, EKO₅, EKO₉, EKO₁₀ and EKO₁₁</p>
7.6	<p>Routine reporting and record –keeping</p> <p>Complaints Register The Licence Holder must maintain a complaints register at its premises, and such register must be made available for inspections.</p> <p>The complaints register contents</p> <p>The Licence Holder is to investigate and, monthly, report to the Licencing Authority in a summarised format the total of complaints logged.</p> <p>The Licencing Authority must also be provided with a copy of the complaints register and records must be</p>	<p>C</p> <p>C</p> <p>C</p> <p>C</p>	<p>No external complaints have been received on dust emissions so far, except for the above non-compliance.</p> <p>There was no complaints register pertaining to dust emissions to verify contents, for reporting to the licensing authority and record keeping.</p>

NR	CONDITION	COMPLIANCE STATUS C/NC/NA	COMMENTS/REMARKS
	<p>kept for at least 5 (five) years after the complaint was made.</p> <p>Annual Reporting The Licence Holder must complete and submit to the Licencing Authority an annual report. The report must include information for the year under review (i.e. annual year end of the company). The report must be submitted to the Licencing Authority not later than sixty (60) days after the end of each reporting period (see report contents on the licence).</p>	C	Monthly and bi-annual reports submitted to authorities were sighted.
7.7	<p>Investigation Atmospheric Emission Reduction Plan – to be submitted to Nkangala District on 31 March 2013, immediately on receipt of the licence.</p> <p>Maximum Release Rates under start-up, Maintenance & Shut-down operating conditions (to be submitted to Nkangala District on 31 March 2013, immediately on receipt of the licence).</p>	C NC	<p>AERP was submitted to Nkangala District.</p> <p>This condition is not met; Eskom is currently working on the programme to control the activity of which its target date of 11/02/2016 has passed.</p>
8	<p>Disposal of Waste and Effluent Arising from Abatement Equipment Control Technology</p> <p>The disposal of any waste and effluent arising from the abatement equipment control technology must comply with the relevant legislation and requirements of the relevant authorities</p> <p>Stack 1 and Stack 2 dry ash with heavy metals must be disposed of in the Ash Dam on site</p> <p>Stack 1 and Stack 2 solid sulphur must be disposed of at the Hazardous waste site</p>	C C C	<p>The waste from abatement equipment technology meet the minimum requirements for its disposal.</p> <p>Dry ash is disposed of at the Ash Dam site</p> <p>Solid sulphur is disposed of at Holfontein, H: H site. Sighted disposal records.</p>

NR	CONDITION	COMPLIANCE STATUS C/INC/NA	COMMENTS/REMARKS
10	Appeal of the Licence		
10.1	The Licence Holder must notify every registered interested and affected party, in writing and within five (5) days of receiving the Municipal decision	C	The Licence Holder demonstrated that it has notified Interested and Affected Parties within stipulated time of receiving the Municipal decision on 20/04/2015.
10.2	The notification referred to in 10.1 must:		
10.2.1	Inform the registered interested and affected party of the appeal procedure provided for in Municipal Systems Act	C	The appeal procedure was defined in the notification letter.
10.2.2	Advise the interested and affected party of a copy of the Atmospheric Emissions Licence and reasons for the decision will be furnished on request	C	Addressed on the notification letter.
10.2.3	Specify the date on which the licence was issued	C	Addressed on the notification letter.
10.2.4	An appeal against the decision must be lodged in terms of Section 62 of the Municipal System Act with the Appeal Authority Nkangala District Municipality.	C	No appeal was made against the decision.