Eskom	Scope of Work	Kriel Power Station

Title:	**Kriel Power Station Scope for Provision of Bottom Boiler and other related Ash Plant Clinker Removal and HP Cleaning of various areas for the period of three years**	Document Identifier:	*****
		Alternative Reference Number:	**N/A**
		Area of Applicability:	**Engineering**
		Functional Area:	**Slurry Plant**
		Revision:	**1**
		Total Pages:	**11**
		Next Review Date:	**N/A**
		Disclosure Classification:	**Controlled Disclosure**

Compiled by	**Functional Responsibility**	**Authorised by**
……..	……..	……..
Malusi Mlaba **System Engineer** **Auxiliary Engineering**	**Neo Muthavhine** **Auxiliary Engineering Manager**	**Harry Mokabane** **(*Acting*) Engineering Manager**
Date: ……	Date: ……	Date: ……

Content

Page

1. Introduction

The scope of work (SOW) for the supply, operation and maintenance of HP cleaning services, clinker lancing , clinker removal during plant maintenance activities on an as and when required basis for a period of 3 years for the Bottom boiler, Ash hopper doors , Ash Sump , Ash lines and other related plants.

2. Supporting Clauses

2.1 Scope of Work

Scope of work for the supply, operation and maintenance of HP cleaning services, clinker lancing , clinker removal during plant maintenance activities on an as and when required for the Bottom boiler, Boiler , Ash hopper doors , Ash Sump , Ash lines, AWR lines and Slurry boiler house and other related plants.

Equipment Specification

The contractor will be responsible to provide the HP machine for the period

The contractor will be responsible for the maintenance and repairs of the HP machine

Under special circumstances the employer might hire a HP machine

Pump Specifications

Technical Specification and Model	Jetstream 3015 Pump – 1000 bar @ 56l/m. • 150 HP John Deree motor with spark arrestor. • Single axle trailer mounted. • Lockable 120l aluminium diesel tank. • Lockable 200l aluminium water tank with water level cut out switch, and ball valve level regulator • Stainless steel filter bag housing fitted with inlet pressure regulator. • Control panel fitted with Murphy engine • Safety cut out system, rev counter, fuel gauge and hour meter. • Emergency stop button and push button

Minimum Pressure	1000 Bar
Flow rate	73 Litres/min

Accessories will include

Accessories will include
1000 Bar HP spiral blast hoses with a minimum length of 30 meters
Different nozzles
1100 Bar gun
Clinker lancing tool to reach minimum of 7 meter
Enough pipes to reach 67m level
All pipes fittings to have safety clamps with cables
6m gun lance 3/8" schedule 80
Nozzle attack tip – 2022
Spitfire rotary short gun tool 15K

High Pressure Operators / Other People

- The contractor to provide
  One qualified Site Supervisor
  12 qualified High Pressure Operators
  12 Assistants
- Only SAQA approved qualifications will be recognized
- Certified copies of qualifications of the contractor
- Contractor to make provision for flexibility of the Site Supervisor and HP Operators

Activities include the following

Access to any part of the plant will be given by the employer's representative after issue of a Task order

Cleaning of plant in accordance with task order

Strict adherence shall be kept to the hours of work mentioned in the task order

The period of response is 2hrs

Sections of Plant

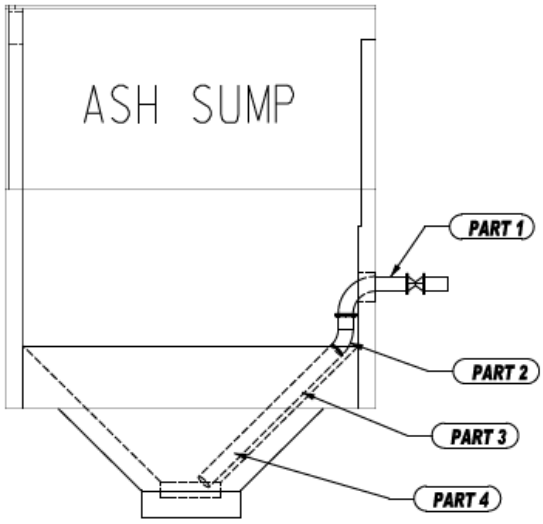
- Ash Sump
- AWR lines
- Ash lines
- Slurry Plant
- Coal Plant
- Station sumps
- Unblock WTP tanks
- CW system
- Ash Plant
- Sluice ways
- Bottom Boiler
- Station Drains
- Boiler Hoppers

2.2 Basic Overview and breakdown of the Works

Bottom Boiler and other related Ash Plant Clinker Removal and HP Cleaning for the period of three years					
No	**Description**	**Unit**	**Qty**	**Rate**	**Amount**
100	**PRELIMENARY AND GENERAL**				
101	Site Establishment	Item	1		
102	Medicals/ Safety File/ Induction	Yearly	3		
103	Personal Protective Equipment	Yearly	3		
104	Covid 19 Masks	Monthly	36		
105	Transport (Home-Work-Home)	Monthly	36		
106	Vehicle (1 x LDV Bakkie)	Monthly	36		
107	Tools and equipment	Item	1		
108	Sit de-establishment	Item	1		
200	**Normal Time**				
201	Supervisor (x1)	Hour	5760		
202	HP Operators (x 12)	Hour	6912		
203	Assistants (x 12)	Hour	6912		
300	**Overtime Weekdays and Saturdays**				
301	Supervisor (x1)	Hour	1296		
302	HP Operators (x 12)	Hour	1555		
303	Assistants (x 12)	Hour	1555		
400	**Overtime Sundays**				
401	Supervisor (x1)	Hour	1296		
402	HP Operators (x 12)	Hour	12		
403	Assistants (x 12)	Hour	1256		
500	**EXTRA CREW(ON AS AND WHEN REQUIRED**				
	Normal Time				
501	Assistants (x20)	Hour	5760		

	Overtime Weekdays and Saturdays				
502	Assistants (x20)	Hour	2592		
	Overtime Sundays				
503	Assistants (x20)	Hour	2592		
600	**Equipment**				
601	HP Machine Rental with hoses (on as and when	Day	730		
602	HP Machine service and Maintenance	Each	3		
603	Minor Services (500hrs)	Each	6		

2.2.1 Drawings



NOTES:
1. ALL FLANGES TO BE BS 4504 TABLE 10.
2. ALL FLANGES TO BE MACHINED COMMON M/C. BACK AND EDGES.
3. MARK EACH END OF EACH ITEM. MARK No'S WITH PAINT.
4. ALL PARTS TO BE PAINTED 1 COAT ZINC CHROMATE AND 1 COAT BLACK BEMACHINED.

CAST IRON SPECIFICATION						
CHEMICAL COMPOSITION OF CAST IRON						
	C	Cr	Si	Ma	P	S
Min	3%	0.20%	1.80%	0.80%	0.00%	0.00%
MaX	3.30%	0.50%	2.00%	1.50%	0.10%	0.10%

2.2.2 General Requirements

Procedure overview

The scope of work relate to a boiler clinker removal. Generally, a clinker is fixed around a wall of boiler hoppers and any areas inside the boiler. There is a drawback that a flame spread and safety accident such as a burn is liable to occur during clinker breaking/lancing. As such correct PPE and face shield must e worn at all times

Online HP Lancing

Obtain Permit to Work

Do not enter the Boiler

Preform risk Assessment

Open Inspection door at 8m level

Perform lancing Using long rod connected to the HP Machine that is injecting water at High Pressure by striking cooling water against formed clinkers

Always close inspection doors at the end of the lancing activity

Boiler Offload Procedure

Obtain Permit to Work

Inspect Hang ups at 49m level before gaining access into the Ash hoppers (If there's any hang ups, remove them)

Perform Risk assessment

Plan and prepare required resources and tools

If the Clinker is Hot, ensure that it is cooled down using water.

Hammering is done manually to dislodge clinkers from boilers

Use long ashing irons/rods to rake out the clinkers.

Use ashing irons, Jack hammers, pick, hammers and other tools to break large clinkers - person inside coffin box must guide iron onto clinker.

Rake out broken clinker.

Close the ash hopper door.

Remove all the clinkers from the grid by manually. Do not forces clinker through grid.

When removing large clinkers, beware of:

A sudden rush of water.

The falling of hot glowing clinkers (which on impact will shoot out of the open (door).

Ensure that ash sump is at least 3/4 full of water.

Ensure Ash plant system is available to prevent flooding the ash sump

Report to, and are accountable to the Team Leader until all work and related activities are completed.

- Provision of;

- All tools and equipment for clinker removal, except scaffolding.

- If rope access is to be used, a copy of the contractors own approved access procedure.

- If the rope rigging is to be attached to boiler tube elements, a minimum of 3 tubes is to be used.

- Portable flood lights and extension cords.

- A Blondine Cable across the entire furnace area at a suitable height above the scaffold.

- Adequate and suitable slings suspended from it for each individual working on the scaffold.

- Safety harnesses for all staff working on the scaffold(s).

- Persons working inside the boiler while high pressure water is being applied to the clinker are to be provided with the following PPE

- Head Protection

- Full Face Shields

- Substantial gloves.

- Adequate trained and registered staff, if rope access is used. (Saiaa Level 1)

- Additional trained and registered staff if working in abnormally hot conditions, so staff can be rotated every 2 hours.

- Trained staff to be positioned at suitable accesses into the confined space.

- Adequate communication system between working staff and persons positioned at the access points.

HP cleaning

Obtain PTW or LAR

Perform Risk assessement

Ensure appropriate PPE is worn

Perform HP cleaning using adequate set pressure for each plat area

Clean the area and do proper housekeeping

2.2.3 Applicability

The document applies to Kriel Power Station Auxiliary Engineering Department and Auxiliary Maintenance Department (Bulk Materials Handling).

2.2.4 Effective date

N/A

2.3 Normative/Informative References

2.3.1 Normative

[1] ISO 9001 Quality Management Systems

[2] OHSAS 18001, Occupational Health and Safety Management Systems, Requirements OHSAS 18001 2007

[3] ISO 14001, Environmental Management Systems, Requirements with guidance for use ISO 140012004

[4] Eskom Safety, Health, Safety, Environmental and Quality Policy 32-727

2.3.2 Informative

Not applicable

2.4 Definitions

Not applicable

2.5 Abbreviations

Abbreviation	Meaning given to the abbreviation
OBL	Outside Boundary Limits
OEM	Original Equipment Manufacturer

2.6 Roles and Responsibilities

The Contractor will ensure the works shall done as per the issued Scope of Work

2.7 Process for Monitoring

Contractor will do the works reporting to the relevant Eskom personnel with QC Documents, Methodologies and progress reporting on the delivery.

2.8 Related/Supporting Documents

Not applicable

3. Acceptance

This document has been seen and accepted by:

Name	Designation
Malusi Mlaba	System Engineer Auxiliary Engineering
Neo Muthavhine	Auxiliary Engineering Manager
Rhofiwa	Engineering Manager

4. Revisions

Date	Rev.	Compiler	Remarks
June 2021	1	M. Mlaba	First Issue

5. Development Team

The following people were involved in the development of this document:

Malusi Mlaba

Nthabiseng Sejane

6. Acknowledgements

Not applicable.