Eskom	SOW	Camden Power Station

Title: **Maintenance of Camden Power Station Boiler Safety Valves 5Y SOW**

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1. Introduction

Camden Power Station operates 8x coal fired boilers, each rated to 200 MW. As a legal safety requirement, the boilers are required to have Safety Valves installed on each boiler to prevent overpressure. Each boiler is equipped with 8x Hopinskons Torsion Bar Safety. 6 Mechanically operated valves are installed on the boiler drum, and 2 valves (1 mechanical, 1 electrically assisted) are installed on the final superheater header. This documents serves to outline the scope of works for a 5-year (60 months) service contract which will include maintenance and outage activities.

2. Supporting Clauses

2.1 Scope

This document specifies the maintenance requirements for boiler safety valves at Camden Power Station.

2.1.1 Purpose

The SOW provides detailed recommendations for the maintenance of boiler safety valves to ensure safe and reliable operation.

2.2 Normative/Informative References

2.2.1 Normative

The latest versions of the following standards and regulations apply:

[1]	ISO 9001	Quality Management System
[2]	SANS 347	Standard Specification for the Categorization and Conformity assessment criteria for all Pressure Equipment
[3]	OHS Act	Occupational Health and Safety Act 85 of 1993 (Pressure Equipment Regulations July 2009)
[4]	ASME B16.5	Pipe Flanges and Flanged fittings
[5]	BS EN ISO 4126-1	Safety Devices for Protection against Excessive Pressure – Part 1: Safety Valves
[6]	240-69258336	Pressure Relieving Safety Devices Standard
[7]	004-10758	Boiler Safety Valves Functional Test (Trevi Test)

2.3 Abbreviations

Table 1: Abbreviations

Abbreviation	Description
MW	Megawatt
SOW	Scope of Works
kg	Kilogram
ITP	Inspection and Test Plan
QCP	Quality Control Plan
OEM	Original Equipment Manufacturer
PM	Planned Maintenance

3. Scope of Works

3.1 System Description

Camden's boiler safety valves are Hopkinsons 3-Inch Torsion Bar Safety Valves. A total of 66 valves are on-site: 64 installed across eight units and two spares in storage.

Operating Principle:

The valve operates via torsion bars that transmit the required load to the valve spindle through angular movement of levers. Upon reaching the set pressure, the valve discharges steam with an initial lift, increasing to full lift as the valve reacts to escaping steam pressure. The valve closes cleanly and without simmer once the pressure is relieved.

Electrically assisted safety valves function similarly, with additional features to relieve surplus steam above normal working pressure. In the event of power failure, these valves operate as standard full-lift safety valves. The valves are attached to the system by means of bolted flanges.

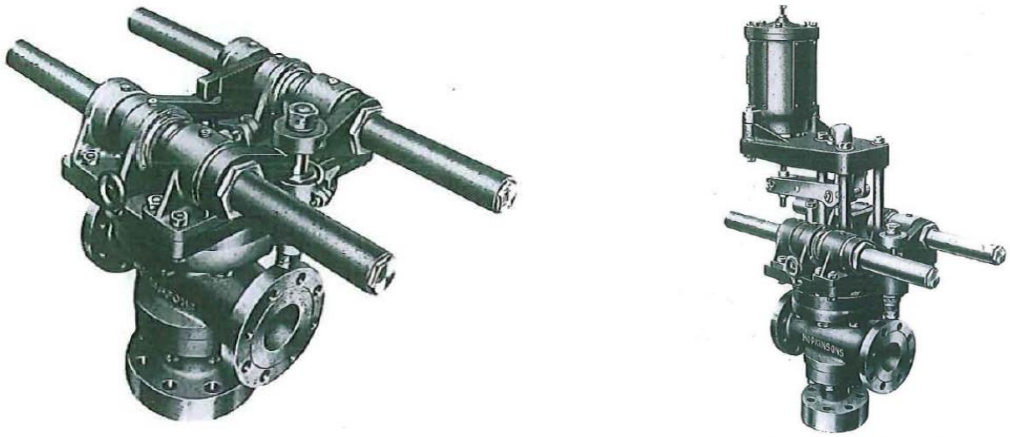


Figure 1 (Left) are Hopkinsons 3 Inch Torsion Bar Safety Valves (Right) are Hopkinsons 3 Inch Torsion Bar Electrically Assisted Safety Valves

3.2 Function Locations

There are 8 valves installed on each unit. In the table 2 below, X represents the unit number (e.g., 40 HAD20 AA603 being Boiler Drum Safety Valve 3 on Unit 4)

Table 2 List of Boiler Safety Valve Functional Locations

X0 HAD20 AA601	Boiler Drum Safety Valve 1
X0 HAD20 AA602	Boiler Drum Safety Valve 2
X0 HAD20 AA603	Boiler Drum Safety Valve 3
X0 HAD20 AA604	Boiler Drum Safety Valve 4
X0 HAD20 AA605	Boiler Drum Safety Valve 5
X0 HAD20 AA606	Boiler Drum Safety Valve 6
X0 HAH40 AA601	Boiler Superheater 4 Safety Valve (Mechanical)
X0 HAH40 AA201	Boiler Superheater 4 Safety Valve (Electrical)

3.3 Maintenance Activities

Table 3 List of Maintenance Activities Required by this SOW

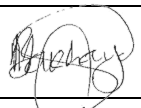
Activity	**Description**
Identification of valves	It is the responsibility of the contractor to ensure that each valve is correctly identified in the plant. The valves are also to be tracked by serial number.
Valve rigging	It is the responsibility of the contractor to ensure that adequate rigging equipment and expertise are available to extract the valve from its installed position and return it to its installed position.
Valve transportation	It is the responsibility of the contractor to ensure that transportation services are available to transport the valves from site to the workshop, if required, efficiently and timeously (considering each valve weighs approximately 700kg)
Stripping valve	It is the responsibility of the contractor to ensure that the valve is stripped professionally by skilled technicians – taking care to preserve the as-received condition of the individual components for inspection. The contractor is then required to submit a professionally written, Strip and Assess report to Eskom System Engineer with pictures of all components in the as-received state for approval and further instruction.
Cleaning valve and valve components	All valve components should be thoroughly cleaned for further inspection. Any solvents used in cleaning should be approved by Eskom.

Activity	**Description**
Inspect and record findings	Eskom System Engineer shall provide the contractor with a sample ITP for all: • Inspecting • Measuring • Testing • Photographing • Documenting It is the contractors responsibility to produce a QCP with the relevant QMS documentation referenced, to address sample ITP requirements
Workshop activities	The contractor is responsible for conducting the below workshop activities, on an if-and-when-needed basis, and only by instruction of an Eskom System Engineer. • Machining • Lapping • Welding • Turning • Drilling • Grinding/ reaping • Heat Treatment • Sandblasting
Valve assembly	It is the responsibility of the contractor to ensure all the necessary OEM documents and assembly instructions are on hand during valve assembly. Technicians are required to have experience working with SPECIFICALLY Hopkinsons Torsion Bar Safety Valves.
Documentation	It is the responsibility of the contractor to ensure that complete data packs are up to Eskom standard and are submitted for signatures and review timeously. It is the contractor responsibility that these data packs are digitally submitted to the engineer, and physically archived in the Doc Centre.
Live inspections	It is the responsibility if the contractor to conduct On Load/ Live inspections of all 64 safety valves at least once a month (where the Unit is on load). The Eskom Engineer will provide a sample inspection form, and it will be the responsibility of the contractor to ensure that all necessary checks are conducted. Defects are to be reported to the Eskom System Engineer.
Greasing	It is the responsibility of the contractor to ensure that regular PM's are conducted, including greasing the valve with new and fresh grease in-situ.

Activity	Description
Workshop pressure test	It is the responsibility of the contractor to ensure that they have facilities to conduct cold, workshop valve settings. This equipment will require calibration certificates and require recalibration once yearly.
Trevi Test	It is the responsibility of the contractor to ensure that they have the facilities to conduct hot on load functional testing of the safety valves as soon as possible after installation on the plant. This should comply with Camden Specific standard.

4. Acceptance

This document has been seen and accepted by:

Name	Title	Signature
V Vilakazi	Camden Senior Boiler Engineer	
M Makhaya	Camden Senior Welding Supervisor	
T Khwashaba	Camden Outage Coordinator	

5. Revisions

Date	Rev.	Compiler	Remarks
08 January 2025	01	K Chanda	First Issue