Eskom	Works Information	Generation Duvha Power Station

Title: **DUVHA NEW HP HEATERS INSTALLATION WORKS INFORMATION**

Unique Identifier:	**382-168996**
Alternative Reference Number:	**N/A**
Area of Applicability:	**Engineering**
Documentation Type:	**Works Information**
Revision:	**2**
Total Pages:	**23**
Next Review Date:	**N/A**
Disclosure Classification:	**CONTROLLED DISCLOSURE**

Compiled by	Functional Responsibility	Authorised by
[redacted]	[redacted]	[redacted]
Date: 2023/05/04	Date: 2023/05/04	Date: 2023/05/04

CONTENTS

PAGE

FIGURES

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Tables

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1. INTRODUCTION

The Duvha Power Station is situated approximately 15 kilometres from the town of Witbank in Mpumalanga. The Power Station comprises of 5 x 600 MW turbo-generator boiler units. Each turbogenerator includes an HP, IP and LP turbine, which exhausts to a surface condenser.

2. SUPPORTING CLAUSES

2.1 SCOPE

The scope of work is the installation of new HP heaters as detailed in this works information.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

In each case, the latest edition/amendment of the National or International Standard or Code of Practice shall apply. The onus shall be on the Contractor to ensure that the latest edition/amendment of the Standards or Codes of Practice applies at the time of tendering.

2.2.1 South African Regulatory Standards

[1]	OHSACT	Occupational Health and Safety Act of 1993
[2]	PER	Pressure Equipment Regulations as defined in OHS Act
[3]	SANS 347	Standard Specification for the Categorization and Conformity Assessment Criteria for All Pressure Equipment
[4]	ISO 3834	Quality Requirements for Fusion Welding of Metallic Materials
[5]	SANS 10227	Criteria for the Operation of Inspection Authorities Performing Inspections in terms of PER

2.2.2 European Standards (BS and BS EN)

[6]	BS EN 13445	Unfired Pressure Vessels
[7]	EN 10216	Seamless Steel Tubes for Pressure Purposes — Technical Delivery Conditions — Non-Alloy and Alloy Steel Tubes with Specified Elevated Temperature Properties

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[8]	EN 15614-1	Specifications and Qualification of Welding Procedures for Metallic Materials — Welding Procedure Test
[9]	BS 287/1	Qualification Test for Welders — Fusion Welding
[10]	EN 10204	Metallic Products Type of Inspection Documents
[11]	EN 1092-1	Flanges and their joints — Circular flanges for pipes, valves, Fittings and accessories, PN designated — Part 1; Steel Flanges
[12]	EN 13480	Metallic Industrial Piping
[13]	VGB-R 171e	"Guideline for the supply of technical documentation for fossil-Fired and regenerative power stations"

2.2.3 Employer's Specifications

[22]	240-106628253	Standard for Welding Requirements on Eskom Plants
[23]	240-105658000	Supplier Contract Quality Requirements Manual
[24]	240-83539994	Standard for Non-Destructive Testing (NDT) on Eskom Plant
[25]	240-55864792	Chemistry Standard for Coal Fired Units with Once Through Boilers Operating at 17 MPa
[26]	ETS0004	Duvha Specification for manufacture and installation of labels
[27]	ENS0002	Duvha AKZ Plant location coding manual
[28]	240-76992014	Project Plant Specific Technical Documents and Records Management Work Instruction
[29]	240-65459834	Project Documentation Deliverable Requirement Specification
[30]	240-54179170	Technical Documentation Classification and Designation Standard
[31]	240-66920003	Documentation Management Review and Handover Procedure for Gx Coal Projects
[32]	240-86973501	Engineering drawing Standard
[33]	240-106365693	Standard for the External Corrosion Protection of Plant, Equipment and Associated Piping with Coatings

2.2.4 Vessel Arrangement Drawings

[43] S 2355/51 1.H1.01 — HP Heater 5A Exterior View

[44] S 2355/51 1 H1 14 — HP Heater 6B Exterior View

[45] S 2355/51 0.H1.02 — HP Heater 5A & 5B Tube Bundle

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[46] S 2355/52 1.H1.13 — HP Heater 6A & 6B Development of Tubes

[47] S 2355/53 1.H1.14 — HP Heater 6A and 6B Shell

[48] S 2355/52 0.H1.06 — HP Heater 5A & 5B Baffles

[49] S 2355/52 0.H1.16 — HP Heater 6A & 6B baffles

[50] S 2355/52 1.H1.08 — HP Heater 5A & 5B Outlet Header

[51] S 2355/52 1.H1.07 — HP Heater 5A & 5B Inlet Header

[52] 057/30694 HP Heater General Layout

2.2.5 Associated Piping Isometric Drawings

[53] 057/21691 Bled Steam to HP Heater 6A

[54] 057/42561 HP Heater 5A drain to DST

[55] 057/43450 HP Heater 6A drain to HP heater 5A

[56] 057/19764 Feed water pipework

2.3 DISCLOSURE CLASSIFICATION

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

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3. DESCRIPTION OF THE *WORKS*

3.1 Introduction

The Duvha Power Station of Eskom is situated approximately 10 kilometres from the town of Witbank in Mpumalanga. Access to the station is by road. The present system (fig. 1) consists of four HP heaters installed in the HP feedheating system of each turbine set. The heaters are arranged in two banks (two HP heaters per bank) in parallel.

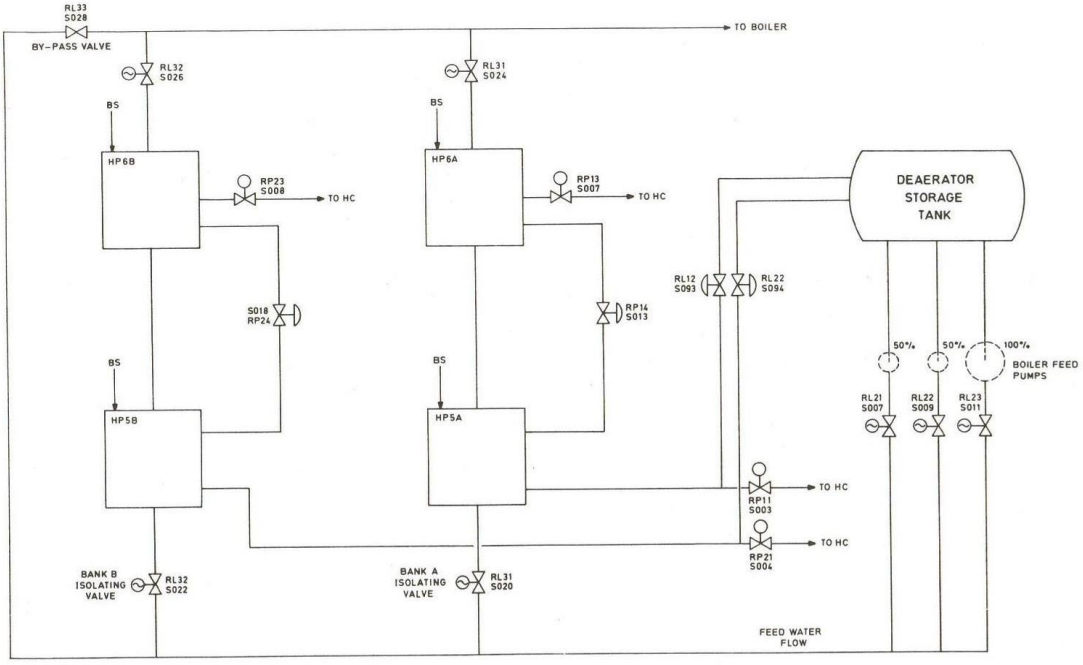

FIG. 1 SIMPLIFIED HP FEEDHEATING SYSTEM

DV 1-2-14

Figure 1: Simplified Feedheating System

3.2 System Description

Each HP heater 6 is mounted on top of the associated HP heater 5 of the relevant bank. The heaters on each bank are numbered 5A, 6A and 5B, 6B.

The feedwater flows from boiler feed pump to HP heaters 5 and then through HP heaters 6 to boiler. The heaters 5A and 5B extract bled steam from the IP turbine whilst the heaters 6A and 6B extracts cold reheat steam. The condensate from the HP heater 6 cascades to the HP heater 5 and is then passed to the Deaerator. Emergency drains are provided to direct the condensate back to the hot condenser, if the HP heater level control is out of operation, or in case of a high level in respective

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heater shell. The shell side of the heaters is vented to the cold condenser or to the expansion vessel. The technical information and design details of the HP Heaters are listed below:

Table 1: Current HP 5 Nozzle details

NOZZLE	QTY	DESIGNATION	DN	NOZZLE CON. ODxWT	MATERIAL
N1	1	FEEDWATER INLET	275	329x25	20Mn6
N2	1	FEEDWATER OUTLET	275	329x25	20Mn6
N3	1	STEAM INLET	350	355,6x6	15Mo3
N4	1	CONDENSATE OUTLET	250	273x5	15Mo3
N5	1	CONDENSATE INLET	200	219,1x10	15Mo3
N6	1	SAFETY VALVE	150	BS4504 PN 40	15Mo3
N7	2	OPERATING VENT	25	33,7x3,2	15Mo3
N8	2	REGULATING PANEL	50	60,3x3,6	15Mo3
N9	1	START UP VENT	25	33,7x3,2	15Mo3
N10	2	PRESSURE GAUGE	15	21,3x4	15Mo3
N11	1	NOZZLE IN RESERVE	3/4"BSP	60 OD	15Mo3
N13	1	EMERGENCY DRAIN	250	273x5	15Mo3

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Table 2 : Current HP 5 Pipe details

HP HEATER LINE	MATERIAL	P (MPa)	T (ºC)	NB	OD	WT
HP heater 6 to 5 distillate drain line	ASTM A106 GRB	5,62	270	200	219,1	8,18
HP heater 5 to DST distillate drain line	ASTM A106 GRB	1,67	200	250	273	6.35
HP heater 5 emergency drain to hot condenser	ASTM A106 GRB	1,67	200	250	273	6.35
HP heater 5 bled steam supply line	ASTM A106 GRB	1,67	415	350	355,6	9.52
HP heater 5 vent to cold condenser	ASTM A106 GRB	1,67	200	25	33,4	3,38
HP heater 5 feedwater supply line	BS EN 10216-2 15NiCuMoNb5-6-4	29	270	-	325	25

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Table 3: Current HP 6 Nozzle details

NOZZLE	QTY	DESIGNATION	DN	NOZZLE CON. ODxWT	MATERIAL
N1	1	FEEDWATER INLET	275	329x25	20Mn6
N2	1	FEEDWATER OUTLET	275	329x25	20Mn6
N3	1	STEAM INLET	250	273x10	15Mo3
N4	1	CONDENSATE OUTLET	200	219,1x10	15Mo3
N5	1	CONDENSATE INLET	200	219,1x10	15Mo3
N6	1	SAFETY VALVE	100	BS4504 PN100	15Mo3
N7	2	OPERATING VENT	25	33,7x3,2	15Mo3
N8	2	REGULATING PANEL	50	60,3x3,6	15Mo3
N9	1	START UP VENT	25	33,7x3,2	15Mo3
N10	1	PRESSURE GAUGE	15	21,3x4	15Mo3
N11	1	NOZZLE IN RESERVE	3/4"BSP	60 OD	15Mo3
N18	1	EMERGENCY DRAIN	250	273x12	15Mo3

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Table 4: Current HP 6 Pipe details

HP HEATER LINE	MATERIAL	P (MPa)	T (ºC)	NB	OD	WT
HP heater 6A to 5A distillate drain line	ASTM A106 GRB	5,62	270	200	219,1	8,18
HP heater 6 emergency drain to hot condenser	ASTM A106 GRB	5,62	270	250	273	9,27
HP heater 6 feedwater outlet	BS EN 10216-2 15NiCuMoNb5-6-4	29	270	-	325	25
HP heater 6 cold reheat steam supply line	15Mo3	5,62	400	250	273	10
HP heater 6 vent to cold condenser	ASTM A106 GRB	5,62	270	25	33,4	3,38
HP heater 6 feedwater supply line	BS EN 10216-2 15NiCuMoNb5-6-4	29	270	-	325	25

Table 5: HP Heater 5 Design detail

	Hamon Sobelco	Units
Design Pressure		
Tube Side	28.9	MPa
Shell side	1.57	MPa
Design Temperature		
Bled steam nozzle and shroud	416	°C
Tube Side	230	°C
Shell side	230	°C
Hydraulic Pressure Test		
Tube Side	36.125	MPa
Shell Side	1.9625	MPa
HP Heater Weight		

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1 Empty	43700	kg
2 Full of water	74400	kg
3 In service	56400	kg
Shell Length	14000	mm
Shell outside Diameter	1850	mm

Table 6: HP Heater 6 Design detail

	Hamon Sobelco	**Units**
Design Pressure		
Tube Side	28.9	MPa
Shell side	5.52	MPa
Design Temperature		
Bled steam nozzle and shroud	416	°C
Tube Side	300	°C
Shell side	290	°C
Hydraulic Pressure Test		
Tube side	36.125	MPa
Shell side	6.9	MPa
HP Heater Weight		
4 Empty	60000	kg
5 Full of water	86800	kg
6 In service	72000	kg
Shell Length	12400	mm
Shell outside Diameter	1900	mm

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Table 7: Current HP 5 Nozzle details

NOZZLE	QTY	DESIGNATION	DN	NOZZLE CON. ODxWT	MATERIAL
N1	1	FEEDWATER INLET	275	329x25	20Mn6
N2	1	FEEDWATER OUTLET	275	329x25	20Mn6
N3	1	STEAM INLET	350	355,6x6	15Mo3
N4	1	CONDENSATE OUTLET	250	273x5	15Mo3
N5	1	CONDENSATE INLET	200	219,1x10	15Mo3
N6	1	SAFETY VALVE	150		15Mo3
N7	2	OPERATING VENT	25	33,7x3,2	15Mo3
N8	2	REGULATING PANEL	50	60,3x3,6	15Mo3
N9	1	START UP VENT	25	33,7x3,2	15Mo3
N10	2	PRESSURE GAUGE	15	21,3x4	15Mo3
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N13	1	EMERGENCY DRAIN	250	273x5	15Mo3

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Table 8: Current HP 5 Pipe details

HP HEATER LINE	MATERIAL	P (MPa)	T (ºC)	NB	OD	WT
HP heater 6 to 5 distillate drain line	ASTM A106 GRB	5,62	270	200	219,1	8,18
HP heater 5 to DST distillate drain line	ASTM A106 GRB	1,67	200	250	273	6.35
HP heater 5 emergency drain to hot condenser	ASTM A106 GRB	1,67	200	250	273	6.35
HP heater 5 bled steam supply line	ASTM A106 GRB	1,67	415	350	355,6	9.52
HP heater 5 vent to cold condenser	ASTM A106 GRB	1,67	200	25	33,4	3,38
HP heater 5 feedwater supply line	BS EN 10216-2 15NiCuMoNb5-6-4	29	270	-	325	25

3.3 *EMPLOYER'S* OBJECTIVES AND PURPOSE OF THE *WORKS*

Remove and replace HPH 5A and 5B on unit 2, HPH 5A and 5B on unit 5, HPH 6A on unit 4 as well as HPH 5B on unit 6 and install new heaters. New heaters will be free issued to *Contractor*.

4. DESIGN *WORKS* TO BE PERFORMED AT DUVHA POWER STATION

a) There is no design required for new heaters, these will be designed and supplied in separate *Works*.
b) However, pipe designs may be required to ensure alignment of pipework and certain spool pieces. Blocking frame designs are also required.

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5. *EMPLOYER'S* SCOPE OF WORK

5.1 PRE-OUTAGE *WORKS* TO BE PERFORMED AT DUVHA POWER STATION

(a) Design of Blocking and restraining of the Bled steam and Distillate lines on the affected heaters as well as the Feedwater inlet and outlet piping applicable to the specific unit where heaters are to be installed. Blocking frames must be designed such that it restricts movement in all three planes (X, Y and
Z)

(b) Detailed method statement indicating the process flow logic to execute the activities as detailed in the various subsections of section 3 of this document.

(c) Install blocking frames on bled steam, feedwater and distillate lines of all 4 HP heaters before outage commences on the specific unit where heaters are to be installed but don't block the pipes yet.

(d) The number of blocking frames and their installation positions will be depending on cutting locations. Cutting locations to be determined by *Contractor*.

(e) All the relevant pipe hangers must be gagged as well after blocking. As a minimum, three hangers upstream and downstream of the pipework.

(f) Elevation survey to be done at various points on the bled steam, feedwater and distillate piping for a reference prior to making any cuts.

5.2 *WORKS* TO BE PERFORMED DURING OUTAGE

The *Works* shall apply to the specific unit on outage as per the Eskom outage listing:

(a) When unit is off and pipes are cooled down, make reference marks on all pipes and securely block the pipes onto the previously installed blocking frames, before any hot work is done.

(b) The *Contractor* shall be responsible for the removal of HP heaters 6A and 6B to allow access to the HP heater 5A and 5B and transporting to laydown area. Heaters 6A and 6B are supported on top of HP heaters 5A and 5B and must thus be removed to gain access to HP heaters 5A and 5B.

(c) Laydown area will be specified during the site meeting at tender issue.

(d) The empty weight of each HP heater 6 is 60 Tons. The heaters will still have water in the tubes due to the design of the heater, therefore the *Contractor* rigging study and planning must be based on at least an additional 10% weight, thus totalling 66 tons per individual heater.

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(e) The horizontal floor beams between the HP Heaters 5's and the HP Heaters 6's on which the gratings are installed are removed to get access to the HP Heater 5's, hence sufficient and temporary support beams must be installed to ensure structural integrity during the installation/removal process.

(f) The *Contractor* must do a survey to establish the correct support requirements and issue a report for approval/acceptance entailing all temporary support details.

(g) The report must include, but is not limited, to existing beam cutting locations, splicing requirements and entailing all necessary temporary beam details.

(h) Also, these supports must be temporarily fixed/connected to the existing plant beams until the removal//installation of the HP Heaters are completed and all existing plant structures, supports and beams have been reinstalled and accepted.

(i) In cases where temporary welds are made, the weld metal must be completely removed and blended upon removal.

(j) In cases where the temporary beams are installed on top of gratings, it must be done in a safe and secured manner and located directly on top of existing horizontal beams whilst being temporary connected (via bolting as an example).

(k) The *Contractor* shall be responsible for removal of HP Heater 5A and 5B and transportation to laydown area

(l) Installation of new HP heaters 5A and 5B (unit 2 and unit 5), heater 6A (unit 4) as well as heater 6B (unit 6) in place of the old corresponding HP heaters.

(m) The HP Heaters must be installed as such that they are structurally sound in terms of placement on their support's plates (HPH 5's on the structure and HPH6' on top of HPH 5's) and 100% level in the horizontal plane.

(n) If new shim plates or modification is required to the existing shim plates it must be the responsibility of the *Contractor*. Rollers to be inspected before removal and installation of new heaters.

(o) Re-install the original HP heater 6A and/or 6B back for the specific unit.

(p) Ensure that all bled steam, feedwater lines and auxiliary piping can align and be connected. In the event that a spool section will be required it will be the *Contractor's* responsibility to design the section, supply material and welding consumables and install.

(q) Blocking of the piping where spool pieces are to be installed is also the responsibility of the Contractor and to be approved by the Engineer.

(r) Before any of the Bled steam, feedwater or distillate lines are welded, the AIA to verify that the blocking frames are still intact, and that the pipework is aligned. This must be an intervention point on QCP as a hold point for AIA and system engineer.

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(s) All additional smaller bare piping that will not be block shall be in the stress-free position before welding.

(t) It might be necessary to weld in spool pieced to ensure stress free connection of the piping. No rigging equipment shall be allowed on the smaller, non-blocked piping, for alignment.

(u) Isometric drawings will be supplied by the *Contractor* and will include and indicate each cut and weld line as well as a bill of material for all new material.

(v) For all connecting pipework the isometric drawing will indicate the pipe run from the heater to the first valve in that pipeline.

(w) *Contractor* will allow for positive material identification (PMI) of each existing line where welding is required, these PMI's will be included in the final databook.

(x) Where new spool sections are fitted, and the selected materials are different from the current installed material a pressure containment calculation will be supplied for each of the new spool sections or piece of equipment. Design code for any new piping and / or modification will be based on EN 13480.

(y) Particular material appraisals shall be required (PMA) for materials not mentioned in the European Standards (EN)

(z) The nameplates on the old HP heaters to be removed from the vessels and handed to the *Employers* system Engineer.

(aa) On completion of installation of the heaters a full statutory pressure test will be performed by the *Employer* and others on both shell and tube side. The *Contractor* will be required to be present during this pressure test to correct any defects that was within the boundary of his scope of work.

(bb) *The Contractor* shall also take note that during this outage statutory inspections will be performed in the vicinity of these heaters as well as on HP heater 6's, and the contractor will interface with the statutory inspection *Contractor* for access and planning.

(cc) A certificate of manufacture for the works performed by the contractor will be issued by the *Contractor* on completion of the works, to indicate conformance to the PER and SANS347 requirements.

(dd) The old redundant HP heaters remain the property of Eskom

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5.3 DATA BOOKS

A copy of a proposed databook index will be supplied with tender – the index will cover the actions as listed in the scope of work.

The original hard copy, two additional hard copies and an electronic copy of the complete data books must be delivered to the *Employer* on completion of this *Works*.

A minimum, the following information must be included in the data books:

(a) Index page
(b) Order requirements and specifications.
(c) ISO 3834 Certificate
(d) WPS and PQR documents
(e) Signed quality control plans and all relevant documentation.
(f) All positive material inspection reports (PMI's)
(g) All Particular material appraisals (PMA)
(h) Design calculations
(i) Isometric drawings (As built) clearly indicating interface with existing plant
(j) Rigging study
(k) Method statement
(l) Correspondence regarding concessions, deviations, technical verifications.
(m) Test certificates with detail results for all destructive and non-destructive testing as well as dimensions.
(n) Final copy of the completed project schedule

6. THE GENERAL REQUIREMENTS ARE AS FOLLOWS

(a) The *Contractor* must acquaint himself with all the details of the plant and develop a replacement program as well as a method statement for replacement of the specified HP heaters on unit 2, unit 4, unit 5 and unit 6. This must be submitted with the final offer and approved by Eskom. Heaters may change in terms of units to be installed or positions.

(b) All new materials are to be supplied by the *Contractor*. These new materials must be compatible with the existing plant and materials selected for re-use within the plant. Any change of material shall first be approved by Eskom engineer. Particular material appraisals (PMA) will be supplied where required as per the latest EN codes and standards.

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(c) Material certification requirements shall be as follows: Feedwater, Bled steam and Distillate lines must have 3.2 certification and every other piping must have 3.1 certification.

(d) Any grating or handrails that might be removed will be the responsibility of the *Contractor*; however, each opening will be barricaded by means of solid barricading. All grating and handrails to be reinstated after project finishes.

(e) Methodology for barricading will be included in method statements.

(f) The *Contractor* will be responsible for the supply and building of all scaffolding.

(g) The *Employer* will make available the Turbine Hall overhead crane. Because this work will happen during an outage the *Contractor* shall take cognizance of the fact that the crane is used by multiple plant areas and there might be a waiting time for using the overhead crane.

(h) The *Contractor* will be responsible for any rigging requirements. Cranage to be arranged and coordinated with the Project Manager and respective on-site crane custodians (Auxiliary and Electrical Engineering as well as Electrical Maintenance Department). The *Employer* will provide the crane driver; however, this must be arranged in the outage meetings.

(i) Cutting by abrasive disc shall be used wherever required. Only in exceptional circumstances agreed to by Engineering, will flame cutting be allowed. All correspondence to be coordinated via the Project Manager.

(j) In the event that the *Contractor* shall find it necessary to cut into or modify any existing power station steelwork, platforms or other equipment, whether steel, concrete, brick, etc., the *Contractor* shall, in the firstly obtain the Project Manager's permission to do so. This to be agreed to by the System Engineer in accordance with instructions issued by Engineering to the Project Manager.

(k) The *Contractor* shall re-instate all items cut into or modified at his own cost and in the same state as the original.

(l) The *Contractor* shall arrange with the Project Manager prior to disconnecting and removing all electrical, instrumentation connections to the pipework, fittings and valves which are to be dismantled in order to complete the work as in terms of this specification.

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7. QUALITY CONTROL AND ASSURANCE

7.1 MINIMUM QCP REQUIREMENTS

The contractor shall provide 4 different QCP's; each QCP will be modified to suite the specific unit:

- Removal of HPH 5
- Installation of HPH 5
- Removal of HPH 6
- Installation of HPH 6

The following Intervention points will be included as a minimum:

(a) Verification of blocking frames before cutting

(b) Verification of Bled steam, feedwater and distillate lines fit up before welding

(c) All cutting lines to be determined by the *Contractor* and approved by the System Engineer as well as the Project Manager's inspection authority (3rd Party).

(d) Method statement approval

(e) Rigging study

(f) Blocking frame design approval

(g) Review of all WPS, PQR and welder qualifications.

(h) Approval of weld map

(i) Approval of NDT procedures (j) Review of NDT reports.

(k) Review and sign off of Isometric drawings

(l) Design approvals

7.2 QUALITY CONTROL AND INSPECTION

(a) The *Contractor* shall exercise strict and adequate quality control during all phases of the work.

(b) The *Contractor* shall prepare suitable quality control plans (QCP's) and Inspection and Test Plans (ITP's) for all work carried out.

(c) The *Employer*, the Inspection Authority, the *Employer* QC Representative and the *Contractor* shall review these QCP's/ITP's jointly and the actual scope of quality control and inspection required for the Contract agreed upon.

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(d) The QCP's/ITP's shall be subject to the *Employer*'s approval and shall indicate all inspection and test points, the methods and procedures to be used and the acceptance criteria to be applied.

(e) The *Contractor* is required to notify the *Employer* 24 hours in advance of witness and hold intervention points.

8. WELDING REQUIREMENTS AND NDE REQUIREMENTS

8.1 WELDING

All welding will comply to the Employers Standard for Welding Requirements on Eskom Plant 240106628253 and as per requirements of ISO 3834-2

8.2 NDT REQUIREMENTS

a) All pressure boundary welds to undergo 100% NDT both surface and volumetric testing is required

b) All welding will be full penetration welds on connecting pressure boundary pipework. c) Socket welds will not be allowed

c) All required NDT must be provided by the *Contractor*.

d) All NDT done must comply with Employers document 240-83539994 Standard for Non-Destructive Testing (NDT) on Eskom Plant

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9. TENDER RETURNABLES

9.1 Mandatory Requirements

The *Contractor* shall provide all documentation as per the requirements below for this specific section. If not provided the tender will be considered non-compliant and will not be evaluated.

1. The *Contractor* must provide a reference list with contactable details where similar rigging of more than 30 Tons per single lift was performed. Reference list to include short description of work done.
2. The *Contractor* shall provide proof of valid ISO 3834-2 certification. Complete certification (all pages) of the valid ISO 3834-2 certificate must be submitted and it must clearly indicate the following Design Codes (BS EN 13480; BS EN 13445)

9.2 Qualitative Evaluation Criteria

The information in this section will be used for evaluation purposes. Where a specific item is not provided, a score of ZERO will be allocated to the *Contractor* for that item.

1. The *Contractor* shall provide at least one example of a QCP for similar installations done executed in the past. The QCP must include the detailed steps and that was signed off by the AIA and client.
2. The *Contractor* shall provide a method statement detailing the process to be followed according to the requirements of the works information done.
3. The *Contractor* must provide with tender a typical rigging study and indicate procedures where applicable that includes the following items:
    a. Rigging process / calculations / illustrations that were authorised by a level 5 Red seal certified rigger or professional registered mechanical engineer.
    b. Process of how the contractor controls his rigging equipment, inclusive of calibration / load testing / periodic rigging inspection records as well as daily inspections of rigging equipment such as slings, hooks, spreader beams.
    c. Access control to area below suspended weights during lifting activities.
4. Should *Contractor* have any exclusions or different options as per the details defined in this scope of work it must be clearly listed. Should contractor accept all criteria as defined in this scope of work, a formal letter signed by tenderer to be included in offer to state such.

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10. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

11. REVISIONS

Date	Rev.	Compiler	Remarks
August 2020	0	[redacted]	First Draft
February 2023	1	[redacted]	Update authorization
May 2023	2	[redacted]	Separate section for tender returnable created

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