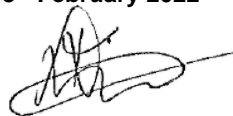


**DRAKENSBERG POWER STATION**  
**WORKS INFORMATION**  
**FOR**  
**SERVICING OF 2 x CENTRIFUGAL LIQUID CHILLING-UNITS (YORK)**  
**&**  
**2 x YUCON COIL (MODEL NO. YFPM 10/1800/92/4P)**

**Date of Report:**

**8<sup>th</sup> February 2022**

**Compiled by:**  
**Senior Supervisor**



**Kwanele Nkosi**

**Accepted by:**  
**EMD Manager:**



**Zandile Mnukwa**

## **Works Information**

### **1 DESCRIPTION OF THE WORKS**

The *Works* make provision for:

1. Supply all spares, material and perform major service on two Centrifugal Liquid Chilling-Units (Type - YK6C63Q65CHHS) at Drakensberg Pumped Storage Scheme. Service report is to be submitted on completion.
2. Supply all spares, material and perform major service on two Yucon (Model No. YFPM 10/1800/92/4P) at Drakensberg Pumped Storage Scheme. Service report is to be submitted on completion.

#### **1.1 Background**

The chiller units are due for a major service as per manufacturer's instruction

#### **1.2 Employers objective**

The *Employer's* objective is to have the chiller units serviced as a matter of urgency to ensure adequate cooling to all critical plant equipment.

### **2 DRAWINGS**

N/A

### **3 SPECIFICATIONS**

<b>Unit Type</b> - YK6C63Q65CHHS		
<b>Compressor Type</b> - YDHF-491VDD		
<b>Oil</b> - YORK " K "		
	<b>SHELL SIDE</b>	<b>TUBE SIDE</b>
<b>Fluid</b>	R134a	Water
<b>Fluid Group</b>	2-Gas	2-Liquid
<b>Design Pressure (Min/Max)</b>	1620	1034
<b>Max permissible operating pressure</b>	1620	1034
<b>Design Temp (Min/Max)</b>	-28.8 to 121.1	-28.8 to 56.6
<b>Test Pressure</b>	1782	1137
<b>Capacity</b>	1.15	0.41

<b>Model</b> - YFPM 10/1800/92/4P	
<b>Fluid</b>	R22
<b>Max safe working pressure</b>	1,724 MPa
<b>Test Pressure</b>	2.58 MPa
<b>Capacity</b>	0.105m3
<b>Max safe working temp</b>	90° C

## 4 CONSTRAINTS ON HOW THE *CONTRACTOR* PROVIDES THE WORKS

### 4.1 Scope

The Scope of Work for the *Contractor* shall consist of, but not limited to, the following activities:

#### 1. Centrifugal Liquid Chilling-Units (Type - YK6C63Q65CHHS) - service both chillers as per scope below:

- Check for correct refrigerant charge to ensure optimum performance and fill up where required
- Check for refrigerant leaks.
- Check compressor oil levels and fill up where required
- Check for oil leaks and repair (if minor)
- Check condition and operation of panel controls, operating controls, and safety controls and adjust where applicable, to ensure optimum performance and reliability
- Check electrical panels for loose connections.
- Check and record volt and amp readings.
- Check operation of all motors/fans.
- Check condition and accuracy of thermometers, gauges and transducers to ensure validity of log readings
- Verify proper equipment operation by analysis of available log readings or readings taken during inspection.
- Chemically clean water-cooled condensers
- Remove end plates of condensers and inspect end plates and tubes for wear and fouling
- Manually brush tubes
- Replace liquid line filter driers
- Replace oil filters
- Drain oil and fill with new oil
- Megohm test compressor motor
- Clear any standing alarm

#### 2. Yucon (Model No. YFPM 10/1800/92/4P - service both chillers as per scope below:

- Check for correct refrigerant charge to ensure optimum performance and fill up where required
- Check for refrigerant leaks
- Check condition and operation of panel controls, operating controls, and safety controls and adjust where applicable, to ensure optimum performance and reliability
- Chemically clean water-cooled condensers
- Check operation of all motors/fans.
- Replace all filter media, check for rusts spots and clean if necessary
- Clean all coils with air hose
- Check coil surfaces for corrosion
- Check all linkages on manual adjustable dampers and grease if necessary
- Check all bolts and nuts for tightness
- Grease all bearings and linkages

- Carry out a visual inspection of all distribution ductwork and check for any audible leaks

Additionally, the *Contractor* Supplier to provide all spares and material required to do this work.

#### **4.2 Requirements for provision of the Works**

- Should any of the chiller visual inspection results, measurement results, or observation results be found to be out of specification, the *Contractor* must inform the *Employer* immediately of such results.
- The *Contractor* must allow the *Employer's* Representative to take photographs of the *Works* during the execution of the work.
- The *Employer's* Representative must confirm any recorded mechanical/electrical damage as received by the *Contractor*.
- The service report must contain the “as found” condition detailing readings/values found before the service and “as left” after the service for each chiller unit. It must clearly state what has been done to rectify controller on chiller 2.
- The *Contractor* has to notify the *Employer* of the final run before leaving site for the *Employer's* Representative to witness the “as left” status
- No asbestos or asbestos products are allowed to be used on the *Employer's* equipment or in any process during the execution of the works.
- Should the *Contractor* use any asbestos or asbestos fibre in the *Contractor's* Workshop on any equipment or in any process, and not limited to the equipment of the *Employer* or use during the execution of the *Employer's* Works, the *Contractor* shall notify the *Employer's* Representative in writing on the Purchase Order issue date of the presence or danger of asbestos materials in the *Contractor's* Workshop.

#### **4.3 Functional Requirements**

The *Contractor* must provide sufficient equipment and tools to carry out the work. The *Contractor* shall have all the necessary ancillary equipment and hand tools available for the work. The Engineer shall be entitled to request reserve plant should there be any doubt as to the efficiency or capability of the equipment provided.

#### **4.4 Dispatch, Delivery & offloading**

##### **4.4.1 Packaging**

The *Contractor* ensures that all material and equipment is adequately transported and delivered to the Works.

##### **4.4.2 Storage**

Store materials in a dry area, protected from adverse weather conditions, staining and damage.

#### **4.5 Clean working Conditions**

The *Contractor* stores equipment and materials for which he is responsible in an orderly manner.

#### **4.6 Quality Management**

The quality requirements are as per Eskom standard 240-55944466: "SUPPLIER CONTRACT QUALITY REQUIREMENTS FOR ENGINEERING AND CONSTRUCTION WORK. The *Contractor* utilizes the Employer's forms for requesting access, etc. These request forms are submitted to the supervisor at least one week prior to the requested date.

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the specifications and drawings rests with the *Contractor*, and the *Contractor* shall institute a quality control system and provide suitably qualified staff to ensure adequate supervision and positive control of the works at all times.

The programming of inspections, hold and witness points of the repairs is to be agreed between the Employer and the *Contractor* prior to undertaking any work.

The *Contractor's* attention is drawn to the provisions of the various Standardized Specifications regarding the minimum frequency of testing required. The *Contractor* shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion and submission of every part of the work to the Employer for inspection, the contractor shall furnish to the Employer the results of the relevant tests, measurements and levels to demonstrate the achievement of compliance with the specifications.

#### **4.7 Safety Management**

The *Contractor* takes every precaution to ensure safety and to protect the *Works* and temporary works.

#### **4.8 Environmental Management**

The Contractor's attention is drawn to the fact that the Power Station is situated in a highly sensitive area with respect to the environment.

The *Contractor* acquaints himself with all statutory and local environment regulations and adheres to these without exception.

The *Contractor* complies with the Hazardous Chemical Regulations when using any hazardous chemicals, as well as complying with the requirements of the National Environmental Management Act of 1988.

#### **4.9 Installation**

N/A

#### **4.10 Other Construction Activities**

The *Contractor* notes that there may be other work taking place during the period when he is performing this service.

#### **4.11 Tests and Inspections to be carried out by Contractor (As Repaired)**

- As per scope above

#### **4.12 Title to site materials**

The *Contractor* has no title to plant and/or materials resulting from him carrying out the Works.

#### **4.13 Site Clearance**

The *Contractor* removes all his equipment, plant and waste generated during the Works on take over of the Works.

#### **4.14 Documentation to be supplied by Contractor**

The service report must contain the “as found” condition detailing readings/values found before the service and “as left” after the service for each chiller unit.

#### **4.15 Completion**

Completion is when:

- All four chiller units have been serviced with all documentation as per section 4.14.

#### **4.16 Accounts and Records**

The *Employer's* Representative assesses payments with the *Contractor* on completion of the Works and prior to submission of the invoices for payment.

Invoices are submitted to:

Accounts Payable

Eskom Peaking Generation

P O Box 3487

Tyger Valley

7536

Failure to submit the invoice to the correct address could result in delays in payment.

The *Contractor* includes the following on the *Contractor's* Tax Invoice:

- Name and address of *Contractor's*
- *Contractor's* VAT registration number if applicable
- *Contractor's* company registration number if applicable
- Name and address of recipient
- Tax invoice number and date of issue,
- Description of goods/service provided,
- Quantity or volume of goods/services
- Period time for which the Tax Invoice is being rendered,
- Contract Number
- Statement whether value added tax is included or excluded.
- *Employer's* VAT registration no. 4740 101 508

### **5 REQUIREMENTS FOR THE PROGRAM**

Contractor to provide the lead time for executing this repair.

### **6 SERVICES AND OTHER THINGS PROVIDED BY THE EMPLOYER**

### **6.1 Electrical Supply**

- All points of supply are provided in terms of availability and location.
- The *Employer* indicates which supply points may be used.
- 220V electrical supply is generally available in the power station complex.
- The *Contractor* verifies extension lead requirements.

### **6.2 Potable Water Supply**

- All points of supply are provided in terms of availability and location.
- The *Employer* indicates which supply points may be used.

### **6.3 Lifting equipment**

- Lifting equipment for loading and off-loading the material and/or spares

### **6.4 Spoil Area**

- A spoil area will be indicated to the Contractor.

**All other services and things needed to provide the works, is supplied by the *Contractor*.**

## **7 SITE INFORMATION**

### **7.1 Directions to site**

The Drakensberg Pumped Storage Scheme is reached from Harrismith via the R49 to Kestel. Take the R74 turn off to Bergville some 2.8 km along the R49. Turn left after 8.7 km and travel 23.5 km to the Kwazulu-Natal/Free State boundary at the top of the Oliviershoek pass. From there, travel 13.1km down the pass and turn left. Follow the sign posted directions to the power station for approximately 9.5 km. The total distance from Harrismith is approximately 60 km. The power station can also be reached travelling from Ladysmith and Durban.